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ABSTRACT

This consortium of liberal arts colleges was instrumental in developing and coordinating their research capability through data processing. Forty research and academic development projects were undertaken. Of special importance: The Pass-Fail System, Study Habits in the Three-three calendar, Changing Trends in Attrition, The Weighing of High School Class Ranks, Development of a Long-Range Planning Model, Coordination of Graduation Check Accounting with Academic Development Records, Computer Orientation in Enrollment. Of twenty-five "seed grants" two have blossomed as funded research projects: Dr. Pillsbury's Development of a Computer Augmented Accounting Course received $29,000 from three sources. Dr. Ballard's program for Directing and Advising Political Science Majors received a $10,000 USOE Small Projects Research Grants. Proposals for two other projects are pending with USOE. (AF)

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ACADEMIC DECISION MAKING: THE CONSORTIUM OF KNOX, FRANKLIN AND MONMOUTH COLLEGES

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ACADEMIC DECISION MAKING: THE CONSORTIUM OF KNOX, FRANKLIN AND MONMOUTH COLLEGES

Summary

This consortium of three small liberal arts colleges was instrumental in developing and coordinating the research capability of the colleges through data processing. Data banks were established at the three colleges along similar lines to provide analyses of academic inputs and outputs.

Forty research and academic development projects were undertaken, some of which have received national attention. Among the research projects of particular importance were the Knox College studies on the Pass-Fail System, Study Habits in the Three-three Calendar, Changing Trends in Attrition at Knox College, General Education at Knox College, Admissions Research at Lake Forest College (originally a member of the consortium), The Weighting of High School Class Ranks at Knox College and the Development of a Long Range Planning Model at Franklin College. Since 1968 Knox College has sent copies of requested studies to sixty-seven colleges scattered throughout the country. Twenty-four individuals have visited this college seeking information on its research and data processing techniques.

Among the development projects at Knox College which are especially noteworthy were the Coordination of Graduation Check Accounting with Academic Development Records, Computer Orientation in Enrollment Admissions Reporting, and Sophistication of the Admission with Reservations (AWR) Program. Franklin College's revision of its data processing facility to use a TC-500 Burroughs Computer with Telephone tie-in to a giant computer was significant.

Of the twenty-five "seed grants" awarded to support faculty research projects two have now been funded in expanded form. Dr. Pillsbury's Development of Computer Augmented Introductory Accounting has received $29,000 in support from the Sloan Foundation, the Esso Foundation and IBM Corporation. Dr. Ballard's Program for Directing and Advising Political Science Majors was supported by a $10,000 USOE Small Projects Research grant. Of the other projects two are currently under consideration for support by USOE.

INTRODUCTION

In 1963 Knox College undertook to formalize its institutional research activity as a definite staff function of the Knox College Office of Institutional Research. This office was charged with presenting annual data on admissions, entering profiles, attrition, course load, etc. to the central administration of the college. More importantly, the Office of Institutional Research was given the responsibility for undertaking special research projects relevant to academic decisions facing the college. These projects supplied data based recommendations to faculty committees, administrators and to the general faculty on specific issues on which a decision was to be reached.

In 1966 the U.S. Office of Education supported a proposal to expand Knox College's institutional research capability and to initiate similar offices at Lake Forest and Monmouth Colleges, these developments to be undertaken through a "Consortium of Knox, Lake Forest and Monmouth Colleges to Support Academic Decision Making". In 1969 Lake Forest was dropped from this consortium, being replaced by Franklin College.

One important purpose of this consortium was to develop data processing capability at these three liberal arts colleges and to orient data output, through the Office of Institutional Research, to the academic problems of the colleges. The development of specific data banks at the three colleges was to be undertaken with a view towards the development of interinstitutional comparisons of data. Many of the unit record (card) layouts are similar for the three colleges and both Monmouth and Franklin College have developed an "academic register" data bank along the lines established at Knox. This bank contains the basic input-output academic information on all students entering these colleges.

Most of the special reports of studies related to academic decisions within the consortium were undertaken at Knox College. While Monmouth, Lake Forest, and Franklin College did undertake to gather data specificly related to academic decisions, their conclusions were usually presented informally or in the form of summary statements. By contrast the Knox College reports are extensive and comprehensive, bespeaking the willingness of the Knox faculty to extensively

experiment in education and to request reports detailing the quantifiable results of experimental changes in college policies.

A third purpose of the consortium was to promote individual faculty research through a "seed grant" program. Individual faculty members were given mini-grants of approximately $500 with which to initiate research which showed promise of blossoming into important research undertakings. Twenty-five such grants were made during the three-year period. Four of these became the basis for small projects proposals to USOE (one accepted, one rejected, and two under consideration). Another of these grants led to a proposal which was supported by the Esso Foundation.

The individuals most directly responsible for developments in the consortium are, at Knox College, Dr. George Melville, Registrar and Director of Institutional Research, Mr. William Ripperger, Director of the Computer Center, and Mr. Charles Gibbs, Director of Data Processing; at Monmouth College, Mr. James McAllister, Director of Institutional Research; at Lake Forest College, Mr. Howard Hoogesteger, Dean of Students; and Franklin College, Dr. Paul Nugent, Director of Institutional Research. These individuals and other administrators and faculty met on the various campuses once or twice a year to review developments and to plan future undertakings. A steering committee consisting of the directors of institutional research was established, meeting once each quarter, to disseminate information concerning specific projects and to discuss seed grant proposals.

The following section, which details the specific undertakings of the consortium, is divided into two parts. In Part One the specific research projects undertaken by the individual colleges will be described and the individual reports appendaged. In Part Two the seed grant reports will be presented.

PART ONE

DEVELOPMENT OF DATA BANKS AND INSTITUTIONAL RESEARCH

1. The Academic Register

At Knox College the academic register is a card file containing information on students entering the college over a six-year period. The card contains the student's name and identification number, high school code, high school class rank, college board scores, first year index at Knox, cumulative index at Knox, GRE or URE score, financial aid data, sex, term entered, last term at the college, and a code for the student's status with the college (current student, graduated, withdrew, dropped).

This file is used annually to print out for each high school the list of students who have come to Knox from this school for the past six years with their entering profile information and academic indices at Knox. Each college representative has this print-out for every school he visits, which is the beginning of his "book" on his schools.

The academic register file has been the basis of much research described below. It has been particularly important in the "handicapping" of high schools for admissions and advising purposes and in the attrition studies. It is also used for studies involving special groups of students.

The academic register at Knox was started prior to the CORD grant but has been greatly expanded under CORD. Both Monmouth and Franklin College have started such a file, following the Knox format.

2. The Student Applicant Card File

The Student Applicant card file is a data bank at Knox College established under CORD. Every student making an inquiry at Knox is given an identification number and entered into this file. The file contains the student's name, number, sex, type source of inquiry, whether or not he applied, was admitted, paid his deposit or dropped out of the admissions picture. The file also contains the student's profile information, his high school code, and financial aid data.

This file is the basis of an extensive weekly print-out providing an admissions data comparison of the current year with the preceding year. This report compares the profiles of admitted students with the profile of those paying deposits. The file also provides a data bank

for an analysis of admissions which has been planned for the coming year. Monmouth and Franklin College keep some of the data described above in a different form but do not make the extensive weekly report that is made at Knox.

3. The Pass-Fail System (Appendix I, III)

Knox College was one of the first colleges to adopt a pass-fail system (1965). In 1967 the Office of Institutional Research, evaluating the two-year experience, prepared for the Academic Status Committee an extensive paper recommending specific changes in the program. The committee then sent its recommendations to the faculty with a summary of questions and answers prepared by the Office of Institutional Research.

The study indicated that students did as much work at the college with the pass-fail system in existence as before. As students become pressed for time, however, they tend to slough the courses taken on a pass-fail basis. A very strong regression existed between students' grade indices and the number of courses taken pass-fail. (positive)

The faculty voted to restrict the number of courses which could be taken pass-fail and to restrict the kinds of courses which could be taken pass-fail.

Follow up studies indicated that many students were receiving a "P" grade for work done at the "D" level. (Appendix III, XVIII) At Knox, the student makes his contract to take a course pass-fail with the registrar's office. The teacher turns in an A-F grade which is converted by computer into a "P" for A-D. On the basis of the research presented, the faculty voted to convert the pass-fail system into a satisfactory-unsatisfactory system in which A-C grades equal S and D-F grades equal U. Subsequent research in the spring of 1970 indicated a very marked improvement in grades for the students opting for satisfactory-unsatisfactory grades over the grades previously reported in the pass-fail system. (Appendix XXV)

Dr. Melville presented the paper on the pass-fail system to the 1967 meeting of the American Association of Collegiate Registrars and Admissions Officers. It has been entered in ERIC.

4. Preliminary Investigation of the Relationship of Entering Profile to Cumulative Index for the Knox Graduate, September, 1962 to Date (March, 1968) (Appendix II)

This study was undertaken as a necessary step in the achievement of reliable models with which to evaluate input-output correlations of the various departments. Scatter diagrams programmed for the IBM 1130 computer facility relate entering profiles of students to their indices at graduation and to first year indices for all entering students. The data indicate that the SAT (verbal and math) cumulative index relationship is linear and that the class rank-cumulative index relationship is not linear. The use of all these variables within a linear multiple correlation model thus requires that the heterogeneity of the class rank data be offset through the addition of a variable weighting the individual high schools. This step will be possible because of the wealth of information which has been processed into the Academic Register Card.

5. The Classification of Recommendations to the Committee on Academic Status, (December, 1967, March, 1968)

The guidelines used by the Academic Status Committee to place on or remove students from Unsatisfactory Status and those guidelines used for dropping students for unsatisfactory academic performance were reconsidered and stated in language which could be programmed for the IBM 1130 computer. The efficiency of these reports, formerly done longhand, has been improved. These reports are not included in the appendices because the information contained in them is considered confidential.

6. References Tables: Course Enrollment Classified by Sex and Student Classification, Winter Term, Knox College, 1967-68

The data were prepared through programming for the IBM 1401 computer facility used by the Office of Data Processing. At this stage the report is a mechanically produced version of a report formerly done longhand at considerable expense. In the future, however, the reports can be easily extended to provide summaries of information not previously obtained. Furthermore, computer contrived percentage of standard enrollment data will be developed within these reports--probably for the first time on any campus. This report is not included in the appendices because of its abnormal width.

7. Weekly Report on Current Admissions Data Contrasted With Corresponding Data for 1966-67, Knox College

These reports are prepared through programming for the IBM 1401 and have never been compiled before this year. They contain up-to-date information on the number of inquiries, applications, acceptances,

deposits, and profile data of applicants.

8. First Term Grades: Two Groups of Students Admitted with Reservations Fall, 1967 (Appendix XXVI)

For the past few years Knox College has "Admitted with Reservations" students who are expected to have academic difficulty as freshmen in specific courses and course sequences. The counseling of students away from these areas during their freshman year has normalized the graduation expectations of these students. During the year 1967-68, fourteen of forty-eight such students either did not follow the advice of their academic counselors or were poorly advised. This situation gives us an opportunity to see if these students have less difficulty under the relatively new three-three system than was the case under the semester system. So far the data indicate that the breakdown in advising was unfortunate, but not so unfortunate as was the general case under the semester system.

9. Monthly Report on Admissions (Lake Forest College)

This is a summary report which compares the current situation in admissions with the corresponding figures of the previous years. Lake Forest makes a specific effort to offset student attrition with transfer students, particularly junior college transfers. These reports have helped them to keep abreast of the effectiveness of their general admissions efforts.

10. The Analysis of Course Enrollment (Monmouth College)

In 1966 Monmouth converted to data processing system based on unit record accounting using an IBM 403 accounting machine. This operation has been augmented through rentals of time on the Knox College 1401 computer. The study of course loads, classified by department, represents a step in the direction of researched based faculty procurement.

11. The First Year Performance of AWR Students: 1967-68 (Appendix IV)

This year the assignment of advisers to those students "admitted with reservations" as to their ability to compete in some courses and sequences open to superior freshmen was done at random. The result was that many of these students were placed in courses or sequences not advocated by past experience. It was, however, possible to statistically check the results. Only seven of seventeen of students taking

courses or sequences not advocated achieved a C average by the end of the year. On the other hand, twenty-one of the thirty-four students whose advisers followed the recommendations achieved a C average. The difference in performance is significant to about the .80 level (a meaningful figure considering the size of the sample). In the future the advisers of these students will not be randomly chosen.

12. Summary of the Admissions Profile for Students Admitted for the Fall of 1968 (Appendix VI)

This year, for the first time, the Office of Data Processing kept complete records of profile and scholarship information for all students applying to Knox College. It was thus possible to achieve a comparison of profile data for (a) all students applying, (b) all students accepted, and (c) all students who have paid deposits. The report shows that the profile of all those accepted which is in turn superior to the profile of all those applying. This shows that Knox College is competing very favorably for those students who apply here. These data were also used to more quickly identify the students to be classified AWR.

13. Preparatory Studies

(1) High, Low and Decile Values of SAT Scores, Classified by Departments, September, 1965, to Date (Appendix VII)

(2) Scatter Diagrams Relating Entering Profile to Cumulative Index, Selected Majors, Knox Graduates, September, 1965, to Date (Appendix VIII)

(3) Multiple Correlations: Dependent Variables-- First Year Index, Cumulative Index, Graduate Record Advance Test Scores; Independent Variables--SAT Math, SAT Verbal, High School Percentile Class Rank, Classified by Departments--Sub-classification: Graduates, All Majors: September, 1965, to Date (Five Tables)

(4) The Handicapping of High Schools from which Knox Students Are Derived (Omitted because of length)

These reports are a continuation of the study begun earlier which provided an introductory analysis of the relationship between entering profile data and cumulative indices classified by the three basic areas of academic study (science-math, humanities, social studies). The multiple correlation coefficients achieved in the follow-up studies are higher than the literature leads one to expect. This undoubtedly means that the classification of the data by departments is meaningful. The strongest predictor variable of academic success

was high school class rank, even though its correlation with cumulative index, etc. was understated because of the basic non-linearity of the data (the correlation model employed was a linear model). The subsequent analysis of our academic register classified by high school which permits the handicapping of high schools, will permit the weighting of high school rank. This will provide a built-in improvement in the correlations. It will also provide for an improvement in our AWR classifications through a weighted consideration of class rank.

14. Monmouth College: Description of Activities (Appendix IX)

The principal work of the Monmouth Office of Institutional Research during the first year of the CORD grant has been the development of a year-to-date card deck and a computer program for the cumulation of student academic data with each grade report. The card layout and computer program follows closely the Knox College patterns. This deck will be a basic research tool at Monmouth and will also permit interinstitutional comparisons between the colleges.

15. Lake Forest College: Marijuana Usage, Lake Forest Students (Dean Howard Hoogesteger (Appendix X)

This was a pilot study which aimed at developing appropriate questionnaires for the derivation of information on student marijuana usage. Among the many interesting tentative conclusions of this study is the contrast between the views of "users" and "non-users" as to the availability of marijuana and the extent of its usage.

16. Multiple Correlations: Dependent Variables--First Year Index, Cumulative Index, Graduate Record Advance Test Scores; Independent Variables--SAT Math, SAT Verbal, High School Percentile Class Rank, Weighted High School Class Ranks, Classified by Departments--Sub-Classification: Graduates, All Majors, Knox College, September, 1965 to Date (Appendix XI)

Ten tables were derived for the purpose of examining the relationship between entering profiles and each of the three dependent variables. An extensive effort was made to weight the high school origin of students so as to compare the simple and multiple correlations involving the weighted high school class ranks with the corresponding correlations involving unweighted class ranks.

In general these tables show that the correlation between entering profile data and student academic performance is strong for Knox graduates and for students who survive to declare a major (end of sophomore year). In general, high school class rank was the strongest independent variable. This variable proved to be strengthened by the weighting of high schools, though this is admittedly a contrived result since the handicapping of high schools is done on the basis of the relationship of student performance to entering profile.

High schools which presented students during the past several years whose performance at Knox was below average for students having comparable credentials were given a weight greater than one. High schools presenting students whose performance at Knox was higher than that of students having comparable credentials were given a weight of less than one. These weights were then multiplied by the given class rank. The effect of this process was to change the class rank of some students from the upper quarter to the second or third quarter and to raise the rank of some students from the third quarter to the second quarter. Since class rank is involved in the "Admission with Reservations" designations which affects student counseling, an opportunity for research is available due to the change in designation.

While most departments showed a reasonably strong correlation between entering profile and student performance, there were a few exceptions, the most notable being chemistry. There seems to be little correlation between the potential of students and their performance in this subject. This may be the nature of the subject or it may be that the department is grading on "lab technique" while boring the better students. Monmouth has agreed to present data for her chemistry majors as a basis for comparison.

17. Academic Performance in Military Science Courses and Advanced Physical Education Courses as Compared with Performance in Other Areas, Knox College, 1966-68 (Appendix XII)

This study was undertaken at the request of the Committee on Academic Status. The report shows conclusively that some few athletes at Knox College maintained a satisfactory academic record by the grace of A and B grades made in Military Science and Physical Education (Coaching Courses). A few of these students had earned no grade higher than C in the remainder of their college work.

Both the Committee on Academic Status and the Instruction Committee reviewed the report and recommended to the faculty that grades in these two areas not be allowed to affect the student's grade index.

The motion was defeated in the faculty vote. However, it was agreed that the provision that students not carrying a C average would not be allowed to take the Physical Education courses and that no student could take more than one such course unless working towards a teaching certificate.

18. The Weighting of High School Class Ranks, Knox College (Appendix XIII)

By grouping data in the Academic Register file according to high school origin of students, a contrast of entering profile data with academic performance at Knox College was obtained for all high schools sending students to Knox College over the past six years. If the profile data was better than average and the performance data below average the high school was assigned a handicap greater than one. Conversely a high school might be assigned a handicap of less than one. These handicaps are multiplied by the actual class rank of the student to provide a weighted class rank. A student in the upper quarter of his high school class might be treated as being in the second quarter of his class if his high school has a weight greater than one. On the other hand, a student in the lower half of his clas might be treated as an upper half student if his high school has a weight of less than one.

A previous study has shown that the handicapping of high school significantly increases the correlation of profile inputs to academic output at Knox College. The present concern is with the redefinitions of "Admissions With Reservations" categories of marginal applications when high school weights are taken into account. The preliminary evidence is that these redefinitions are meaningful for counseling purposes.

19. The Correlation of Entering Class Profiles to Academic Performance for Chemistry Majors, Knox College and Monmouth College

An analysis of the Academic Register file last summer indicated that correlations of entering profile data with academic performance at Knox College was relatively high when the data were classified by the area of the major field of graduates. Thus ten departments had multiple correlations coefficients in excess of .60. By contrast the multiple correlation coefficient for the Chemistry Department was .17. When cumulative index was related to SAT Math, SAT Verbal and High School Class Rank, the simple correlation coefficients were .04, .10, and .09 respectively.

One wondered in this circumstance if the low correlations in Chemistry at Knox College are characteristic of the subject or whether they are peculiar to the Knox Department. Monmouth College provided help in this situation by providing comparable data on recent twenty-one recent graduates in Chemistry.

The Monmouth students achieved a multiple correlation of .42 with the principal variable of influence being high school class rank. The numbers of students involved, however, was too small to provide statistical significance. A t-test of the difference in z' (conversions from the correlation coefficients) for the two colleges produced a value of 1.04 which is far below acceptable levels of significance.

In spite of the insignificance of the conclusions to be drawn from the comparisons of data, the study is important in its expression of cooperation in research. Monmouth College is proceeding to the development of its own Academic Register file, which will permit extensive comparisons of data between the two colleges.

20. Institutional Research: Monmouth College

The Institutional Research program of Monmouth College is contained in Appendix XXVII

21. Institutional Research at Lake Forest College

The research program at Lake Forest is described in Appendix XXVIII. Lake Forest College has made extensive studies of their admissions situation. Data have been collected on students who applied and who did not go there. An analysis was also made of the applications Lake Forest students made to other colleges.

22. Study Habits in the Three-Three System at Knox College (Appendix XIV)

In 1959 and 1960 Drs. Melville and Ballard completed two analyses of study habits of Knox students (one for men and one for women) under the semester system at Knox College. The general conclusion from these studies was that students were taking too many courses and that teachers were teaching too many courses. Most students were completely sloughing study in one course during any given week. Several areas of academic weaknesses were highlighted. These studies were widely distributed and were an influence in the adoption of a three-three calendar at many colleges.

During the winter term, 1968-69, a similar study was made at Knox College, which has in the meantime adopted the three-three calendar. The results of the study were gratifying in showing that the major weaknesses highlighted in the earlier studies no longer existed. In particular the sloughing of individual courses in given weeks proved to be substantially reduced. This study has been submitted to ERIC for dissemination.

23. Distribution of Differences in Grade Indexes for 300 Level Physical Education and for Military Science Courses from Grades Made in all other Courses Compared with the Distribution of Differences in Grades in 300 Level Physics Courses from all other Courses. (Appendix XV)

This study was made in support of earlier research showing that while students in Advanced Physical Education and Military Science Courses generally made grades of A or B in these courses, many of these same students generally made C's and D's in all other courses. It was suggested that some such difference might be found for students taking advanced Physics courses. This study showed this presumption to be unfounded.

Acting on committee recommendations initiated by these studies, the faculty voted down a proposal to eliminate grades in Advanced Physical Education courses from affecting a student's index. This was done on the basis that enrollment in these courses be strictly controlled in the first place. The vote on a similar motion in regards to Military Science was tabled, but was later passed.

24. Computer Orientation in Enrollment (Appendix XVI)

Knox College developed in time for spring enrollment, 1969, a computer oriented system of enrollment. A mark-sensing enrollment card was produced to complement the student's enrollment schedule form. These cards are marked by academic advisers and are machine punched from the marks. These punched cards then provide the data upon which the enrollment is based.

Following an initial run of the enrollment cards departments are allowed to review the course demand and to change their tentative enrollment limitations, add sections of courses and to cancel courses or sections. This review is accomplished in a one-day period and a second run of the enrollment cards made. During this run students closed out of a particular section of a course are transferred to another section of the course by the computer.

Following the second run, students are notified as to their enrollment through a computer run which tells them which courses they are enrolled in, which courses they were closed out of, and which courses they have been assigned to alternate sections. A statement of class offerings is then put out to academic advisers (and posted for students) which states which courses have been closed or cancelled and the number of spaces available in all other courses. Students closed out of courses or students who have not enrolled are then allowed to see their advisers and to go through a supplementary enrollment.

An analysis of closeouts was made by time period which revealed that most of the closeouts were due to great demand for courses taught by particular teachers.

Beyond any doubt the new system of enrollment is superior to past enrollments. It is particularly valuable in that it allows changes of course offerings in mid-stream plus a wealth of data on which future course offerings can be based.

25. Knox-Lake Forest: Cooperation on Admissions Research (Appendix XVII)

Knox and Lake Forest Colleges regularly exchanged admissions information during the year 1968-69. An examination of the data shows Lake forest (as of May 31) with a 13.4 percent increase in applications, a 2.9 percent increase in admissions and a .9 percent increase in net deposits.

As of June 7, Knox College had a 1.3 percent decrease in applications, a 5.3 percent increase in admissions and a 9.3 percent increase in net deposits.

Both colleges had substantial increases in tuition. Lake Forest does not keep a monthly tally on entering class profile. The profile of students planning to enter Knox in the fall of 1969 was roughly the same as the profile of the 1968-69 entering class.

26. Comparison of the Index of Grades Reported by Individual Knox Faculty Members with the Index of Grades Reported by Each Faculty Member's Students by Other Faculty Members (Appendix XIX)

In the past an array of faculty grade indices with anonymity has been presented to each faculty member with the index belonging to the particular faculty member checked. This effectively indicated to the

faculty member where he stood in an array with his colleagues.

The problem with this approach is that these indices do not represent a homogenous set of circumstances. To form them into an array is spurious. For example: The Dean of the College taught advanced physics courses to fifteen students last year, and his index of grades reported was 3.26. Listed in an array of faculty grades this figure would be near the top. This might mean any number of things--the Dean gets good students, the Dean grades easily, etc. Nothing really is gained by putting the figure into an array. If we want to compare the figure, 3.26, with a meaningfully comparable figure it would be the index of grades reported for the Dean's fifteen students by all other teachers last year. This latter index is in fact 3.27.

Appendix XIX shows the index of grades reported by individual faculty members and the index their students earned from other instructors. It also shows the numbers of students taught by each instructor exclusive of students taking courses pass-fail.

Some of the comparisons available in the report are very interesting. For example, three teachers taught courses dealing with current social problems. Afro-American development, etc. They allowed the students who took this type course to grade themselves. The mean grade index reported by these three teachers was 3.09. The index reported for their students by all other teachers was 2.61. This is a difference of almost one-half grade. It suggests that such courses might be more effectively taught on a satisfactory-unsatisfactory basis.

27. <u>The Initiation of Coordination of Academic Development Records With Graduation Check Accounting</u> (Appendix XX)

This project was supported by a seed grant off-setting a part of the extensive computer programming costs necessary to develop the output. The purpose of the output is to supply to the student and to his adviser a statement of (1) the student's entering profile information, (2) the student's college record to date, (3) an analysis of the student's record relative to the college's graduation requirements, and (4) the student's remaining requirements to be completed for the degree. This permits the time between adviser and student to be spent on a personal basis with considerations as to the student's individual development. This output is achieved each term with the information from the preceding and current term updated. Both students and faculty have been delighted with the output since in the past all too frequently advising was a matter of checking to see if the student was meeting the various requirements.

This program has been of great benefit to the Office of the Registrar and to the Office of Institutional Research. The basic information is disc stored, and the heading information for such things as grade reports can be retrieved from the disc, thus eliminating extensive collation of cards. The student's Academic Development Record is updated by computer each term whereas this formerly was an extensive long hand operation. Finally, having the students' records of disc provides a data bank formerly not available.

The output of this program is the best thing of its kind in the country. It is the type of thing people dream about having but rarely achieve. It cannot be accomplished without great effort or without having had a period of disciplined card filing in data processing. Grade changes, for example, must be carried through to changes in the card files and not simply ended with a change in the student's cumulative data and permanent record.

To achieve this program an extensive clerical effort is necessary to put the academic work transferred from other institutions on unit record cards. This had not been done in the past, such information being merely typed on the student's permanent record. A fringe benefit of the new program is that data processing can now supply such data on labels for the permanent record.

28. The Comprehensive Examination at Knox College (Appendix XXI)

This extensive study analyzed student effort and performance on comprehensive examinations. It was complemented by an Analysis of Faculty and Student Responses to A Questionnaire on Comprehensives. (Appendix XXII)

Both of these studies supported a proposition to do away with credit for the Comprehensive and to leave to the individual departments the development of programs which might be worthy of credit.

In perhaps the greatest defeat for Institutional Research ever seen at Knox College the above proposition was abandoned in favor of a move to retain credit, waive passing of the Comprehensive (failure could be offset by extra credit elsewhere) and to include the grade on the Comprehensive in the student's index. The assumption is that relieving the students of the tensions of comprehensives and allowing departments to vary the type of programs passing for comprehensives will motivate the students to greater effort. Such an emotive conclusion places the Knox faculty squarely at odds with Melville's Twelfth law: Never stake your promises of paradise on the legislation of atheists into heaven.

29. General Education at Knox College (Appendix XXIII)

This paper reviews the usefulness of General Education programs in the academic development of students. One of the key issues has to do with the question of whether or not students will take a balanced program without it being required. Data are presented indicating that students will not take humanities courses when not required but that a moderate percentage of students who do not have to take social studies will not do so. A substantial percentage of students who do not have to take math or science will not do so. This question is then related to the question of fully utilizing our heavy resources in science and mathematics.

30. A Report to the President: The Performance of Black Students at Knox College (Appendix XXIV)

This report indicates that Black students admitted under a selective policy have high class ranks and low board scores. They have some initial difficulty here, but most of them develop quite well. In a few cases grades given by faculty seem inconsistently high when compared with the remainder of the student's record. Such courses are now being graded on a Satisfactory-Unsatisfactory basis.

31. Changing Trends in Attrition Rates at Knox College (Appendix XXIX)

Knox College attrition data are classified by sex and by the satisfactory or unsatisfactory performance of the student at the time he leaves the college (whether or not he is earning a "C" average). Individual trend lines are maintained: (1) the attrition rate of making satisfactory progress, (2) the drop-out rate of making unsatisfactory progress, (3) the drop-out rate of women making satisfactory progress, and the attrition rate of women making unsatisfactory progress. These rates are cumulated in various ways and are classified by length of time before drop-out occurred.

In this lengthy analysis the changes in Knox attrition over the past ten years and the reasons for these changes was discussed. The data indicate that the attrition rates for students making unsatisfactory progress has fallen to the point where it can scarcely be improved (two to three percent). This contrasts with an attrition rate after two years of sixteen to eighteen percent ten years ago. This improvement is largely due to the superior admissions and advising policies which have grown out of our "Admissions with Reservations" program. The "marginal" students we do accept are more carefully screened and their advisers counselled as to their freshman program.

Another reason for the falling attrition rates of students making unsatisfactory progress was the adoption by the college of an upper-class C index requirement for graduation. As was shown by the Office of Institutional Research this change actually enhanced the integrity of the degree at the same time it removed the "hangover effect" of a dismal freshman year from disrupting further studies.

The attrition rates of students making satisfactory progress rose over the ten-year period from about eighteen per cent after two years to about twenty-six per cent. A part of this increase in attrition is associated with the falling attrition of students making unsatisfactory progress--a simple reduction of the number of students making unsatisfactory progress will reduce the one rate and increase the other since not all of those students whose performance is improved will stay in college. Other reasons for rising attrition of students making satisfactory progress are (1) increasing costs of tuition, (2) greater student restlessness, and (3) the increased mobility of the national student population.

32. The Problem of Close-outs for the Spring Term, 1969-70; Physical Restrictions on the Freedom of Choice (Appendix XXX)

This study emphasizes the effect changes in college degree requirements can have on the demand and supply for individual courses and clearly indicates that the elimination of requirements increases the problems of closeouts. The resulting increase in demand thus runs into physical restrictions of supply, causing many superior and advanced students to be closed out of courses they might otherwise have entered. The paper argues that if the physical conditions of freedom are not present some students will be restricted in their choice of courses and that it is better to make such restrictions consistent with one's educational values in the first place.

33. Changes in Enrollment in Mathematics, Natural Sciences, Psychology, and Foreign Languages Associated With Changes in College Degree Requirements, 1960-1968 (Appendix XXXI)

This study provides basic data relevant to the question of what happens in specific cases to course enrollments when the college changes its graduation requirements. Since Knox College is currently reevaluating its requirements in the face of some student and faculty demands to do away with all distribution and proficiency requirements, the study provides basic data and recommendations pertinent to the decision that will be made in the coming year. The study supports the maintenance of some requirements with specific recommendations for change.

34. Institutional Research at Monmouth College, 1970 (Appendix XXXII)

35. Institutional Research at Franklin College, 1970 (Appendix XXXIII)

DESSIMATION OF RESEARCH OUTPUT (Appendix XXXIV)

Some six months after the CORD program was initiated the Knox College Office of Institutional Research began to get inquiries and visitors concerning its research program. Since January 1, 1968 we have sent one or more research reports to sixty-seven different colleges. Also, the office has been visited by twenty-four individuals from institutions outside the consortium.

One of the papers produced under CORD (The Pass-Fail System) was presented at a national meeting of The American Association of Collegiate Registrars and Admissions Officers. A second paper was presented at a national convention of the Association for Institutional Research. Three of the papers have already been entered in ERIC.

APPENDIX I

THE PASS-FAIL SYSTEM AND THE CHANGE IN THE ACCOUNTING OF GRADES ON COMPREHENSIVE EXAMINATIONS AT KNOX COLLEGE

Office of Institutional Research
Knox College
August, 1967

George L. Melville, Director
Eleanor Stamm, Assistant

At first glance one might be tempted to dismiss the pass-fail grading system as one of those "exciting" innovations in academic procedures which educators must explore from time to time to satisfy their sense of "involvement in learning processes which are alive and viable". Seldom does one find educationese in such flower. Rarely has an educational experiment been greeted more enthusiastically. Thus of the Princeton pass-fail program,[1] Dean John Monro of Harvard: "Bravo...It comes as a nice, pleasant springtime surprise...original...beautiful."[2] (Harvard will wait and see if it works.)

In fairness to this spirit of optimism, however, it should be recognized that unless such experimentation is undertaken with flair it may succumb to the inflexibilities of convention before it can get off the ground. Furthermore, one can see in the enthusiasm for pass-fail experimentation a reflection of the frustration which "positive motivation in learning" theorists have felt these many years in their battles with conventional teaching and grading procedures.[3]

The Knox College system of pass-fail grading, which antedated the Princeton program by one year, was intended to provide encouragement to juniors

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[1] The Princeton program is intended to encourage students "to take courses they might otherwise by-pass because of pressures for high grades". Students may take one course per term on a pass-fail basis for a maximum of four terms. New York Times, May 5, 1965, p 49.

[2] New York Times, May 23, 1965, E-9.

[3] The positive theorists abhor the threat of low grades as a (negative) stimulus to learning, arguing that this makes the teacher's evaluation of a student pre-eminent; that what tends to be learned, or not learned under these circumstances is how to do well on the tests of individual teachers.

and seniors to take courses outside their major fields.[4] The system was established on a two year trial basis, the Academic Status Committee being charged with reporting its evaluation of the experiment to the general faculty at the end of the trial period. Following the faculty's decision to eliminate grades on the Senior Comprehensive Examinations in computing students' cumulative indices, the committee was invited to include an evaluation of performance on the Comprehensive in its report. To support this committee's deliberations, the present paper (1) examines some basic data concerning enrollment and performance in courses taken pass-fail at Knox College, (2) analyzes the performance on Comprehensives following the change in academic accounting, and (3) makes policy recommendations concerning the restructuring of the pass-fail system.

I

Pass-Fail Enrollment

The pass-fail system has been popular among students at Knox College. Over forty per cent of the 1966-67 seniors who were eligible took at least two courses on a pass-fail basis in their junior and senior years. Over sixty per cent of the 1966-67 juniors who were eligible took at least one course on a pass-fail basis. Table I indicates a total pass-fail enrollment in 1965-66 of 243, a figure which increased to 378 in 1966-67. This

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[4] Juniors and seniors must have an upperclass index of 2.00 or better to be eligible to enroll on a pass-fail basis. They can not take a course pass-fail in their major field, nor will they be allowed to take a course pass-fail which is to be used to satisfy a proficiency in mathematics or language. Such courses may be used to satisfy General Education distribution requirements, however. In this sytem "pass" indicates that the student has performed in what would normally be regarded as the A - D range.

55.5 per cent increase is to be partially explained by the fact that the change to the three-three system increased the eligible student's opportunity to take a course pass-fail by fifty per cent. It should also be noted that the 1966-67 junior class was twenty-five per cent larger than the junior class of the preceding year. Such things considered, however, pass-fail has obviously "caught on" among the students.

Table II shows that of the 1966-67 student body, the mean grade index for those students who had taken a pass-fail course at every opportunity (five for seniors, three for juniors) was 3.01. This figure compares with a mean index of 2.67 for those eligible students who took no pass-fail courses. As a general statement it may be said that a student's grade index varies directly with the accepted opportunity to take pass-fail courses. This is explained by (A) the tendency for the superior students to take pass-fail courses more frequently than the average student, and (B) the tendency of students to relax in the pass-fail course while concentrating their energies on the courses which count in their grade averages. We shall present evidence on these points below.[5]

Table III indicates that about forty per cent of the pass-fail enrollment was associated with the satisfaction of distribution requirements. This average is not particularly meaningful when one considers the tremendous variation in the use of pass-fail to satisfy distribution requirements

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[5] Meanwhile, it should be emphasized that the evidence to be presented does not imply that a smaller amount of academic work was done at the college in the presence of the pass-fail system than would have been the case in its absence.

that exists between the three basic areas. Roughly, three-quarters of the courses taken pass-fail in the science-math area were used to fulfill distribution requirements. The corresponding figures for humanities and social studies were one-third and one-fourth respectively. These data reflect a long standing fact at Knox College that science-math majors show more willingness to take humanities and social studies courses than majors in these latter areas show willingness to take science-math courses.[6]

The idea of permitting students to take distribution requirements on a pass-fail basis rests on the presumption that in this way students will be encouraged to take a more rigorous set of courses than they would normally take. In the sciences the number of students who actually are influenced towards a more rigorous program is relatively small. The following figures indicate the fall term enrollment on a pass-fail basis in the elementary mathematics and science courses:

Pass-Fail Enrollment	Course Taken
5	Biology 121
2	Chemistry 101
2	Math 151
1	Geology 101
0	Physics 101 - 111

[6] By current standards the students who graduated the year before the present distribution requirements went into effect completed ninety-eight per cent of the humanities requirement, ninety per cent of the social studies requirement, and seventy-one per cent of the science-math requirement. The non-science majors completed only fifty-seven per cent of the science-math requirement. Office of Institutional Research, The Distribution of Courses Taken by 1963 Graduates of Knox College, Oct. 1963.

By contrast, of the ninety-four students enrolling in Biology 320 (Human Ecology) in the spring term, fifty-two enrolled on a pass-fail basis. What useful purpose is served by permitting students to enroll pass-fail in a course designed to fit into the General Education program is not clear. It is to be doubted that the existence of the pass-fail system increased the enrollment of this course to any considerable degree.

Pass-fail enrollment in the humanities and social studies areas has been diversified rather than concentrated in especially prepared General Education courses. In many cases in these areas enrollments doubtlessly support the hoped for achievement of pass-fail--the enrichment of students' academic programs. It must be remembered, however, that the average student's program in humanities and social studies was quite decent before pass-fail and much of the enrollment under consideration would have occurred had the pass-fail system not existed.

The Academic Performance in Courses Taken Pass-Fail

From the standpoint of academic performance, the pass-fail system was a failure in its first year of operation. In 1965-66 the faculty reported that seventeen and one-half per cent of the students taking courses on a pass-fail basis performed comparably to the D and F level. Usually only seven per cent of the juniors and seniors earn D's and F's, and a large share of these low grades are earned by students not eligible for pass-fail. The percentage of A's and B's earned by juniors and seniors in 1965-66 was 63.4, as compared with 65.5 the preceding year. We might have expected a higher percentage of A's and B's if the pass-fail students had given special attention to the courses which counted in their grade average.

With the change to the three-three system the academic performance of students taking courses pass-fail greatly improved. For the fall term the faculty reported that nine per cent of the pass-fail students were lagging at the D and F level. By the end of the second year the number of very poor showings by pass-fail students was moderate,and scattered observations were made by faculty that B+ work was not uncommon for pass-fail students. It is also worthy of note that the percentage of A's and B's earned by the 1966-67 Senior Class was 72.9, an all time high. A and B performance in the junior class, however, remained stable at 60.4 per cent.

Academic Performance in Biology 320: Human Ecology

Table IV shows that of the ninety-four students enrolled for Biology 320 in the spring term, fifty-two took the course on a pass-fail basis. Table V indicates that these students had a mean cumulative index of 2.62 at the end of the winter term. Their mean performance rating in Biology 320 was 2.42. The remaining forty-two students who took the course on a normal basis had a mean index of 2.42, but a performance rating of 3.02 for the course. The difference in the performance of the two groups is significant to .01 level, and it should be emphasized that both groups of students consisted largely of majors in humanities and social studies. The data indicate that while most students taking Biology 320 on a pass-fail basis did substantially more work than was necessary to "get by" the course, these students did not work up to their potential. Apparently the grades of the other students in the course appreciated through a comparison of performance with pass-fail students.

Table VI shows that the fifty-two students taking Biology 320 on a pass-fail basis had a mean index of 2.92 in those courses they took for credit. If we average this performance with the performance rating in Comprehensives and in Biology 320, we get an index of 2.73 for the term, a figure we might have expected with or without the pass-fail system. There is no reason to believe that these students would have achieved a grade average significantly different from 2.73 if the pass-fail system had not existed. The data do suggest, however, that when study requirements for courses conflict and one of the courses is taken on a pass-fail basis, the pass-fail course will generally be sloughed.

II

The Performance on Comprehensive Examinations

Another step in the direction of deemphasis on grades at Knox College came in the faculty decision not to include Comprehensive grades in the determination of cumulative indices beginning with the class of 1967. Table VII compares the performance of graduating seniors taking the Comprehensive in 1967 with the performance of their counterparts of 1966. The data indicate that the 1967 seniors took the Comprehensive Examinations much less seriously than 1966 seniors. The percentage of A's on these tests fell from 21.0 to 6.7.

One might be tempted to dismiss the above conclusion on the basis that the percentage of A's in 1967 was biased downward by the fact that Honors candidates did not take the Comprehensive. However, only eight students missed taking the Comprehensive for this reason, and it is by no means a foregone conclusion that all of these students would have made A's.

Nor can the poorer showing on the 1967 Comprehensive be discounted as a reflection of the general fall in cumulative indices. As Table VII indicates, the fall in the Comprehensive index was almost exactly matched by a fall in the average of cumulative indices. On the basis of the 1966 data,[7] we would have anticipated a fall in the Comprehensive index of only one-third its actual fall. Given the knowledge that the 1967 average of cumulative indices would fall to 2.60, we might have expected the 1967 Comprehensive index to fall to 2.71. The fact that the latter index also fell to 2.60 reflects the instability in the relationship between cumulative indices and Comprehensive grades which occurred between 1966 and 1967.

The faculty in its wisdom has succeeded in making a bad situation worse. In recent years we have had a number of students who did not achieve as high a grade on the Comprehensive as we had expected, and this situation has now been magnified. The drastic fall in the percentage of A grades on the Comprehensive is reflected in the smaller mean and variance of Comprehensive grades in 1967. The same fact accounts for the reduced amount of variation in Comprehensive grades that can be associated with variation in grade indices. Table VII shows that in 1966 this association was thirty-six per cent; in 1967 the figure was twenty-five per cent. Considering the currently low coefficient of determination (r^2) and the equally low coefficient of regression we may conclude that, if the object is to raise the general performance on the Comprehensive, we will not succeed merely by getting better students.

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[7] Coefficient of Regression = .35. This value fell to .25 in 1967.

Performance on the 1967 Economics Comprehensive

It may be felt, of course, that the above analysis of Comprehensive grades correlates the wrong variables. A correlation between an index of grades required in the major and Comprehensive grades might provide a more meaningful coefficient. A comparison of performance in 300 level courses required in the major with Comprehensive grades might also be valuable. Unfortunately, such major field indices are not at hand and cannot be readily obtained for the entire population.[8] For illustrative purposes, however, the relevant data have been assimilated for the Economics majors who took the Comprehensive Examination in 1967.[9]

Table VIII indicates that the twenty-three students who took the 1967 Comprehensive in Economics had a mean cumulative index of 2.63 and a variance of .19. These averages do not differ significantly from the

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[8] The existence of such data would provide us with more specific information as to the relationship between performance in the major with performance on the Comprehensive. The conclusions of the immediately preceding analysis, however, would only be strengthened by their availability. The central fact of the matter relates to the changing variance of Comprehensive grades reflecting the smaller percentage of A grades. Since we know that grades in the major do not vary as much as total grades and that grades in required courses vary even less, we would expect less correlation between these indices and Comprehensive grades than we have obtained between cumulative indices and Comprehensive grades. Compare Table IX.

[9] The Department of Economics was selected for a number of reasons. The members of the department have made an effort to impress upon the students the seriousness of the Comprehensive and if any substantial correlations are to be found between performance on the Comprehensive and other indices they should be found here. The department also assigns the grade in the Comprehensive before it knows to whom the grade is being assigned. A final consideration is that the department declares specifically which courses are considered requisite to the major, and a student's index of grades for these courses is relatively easy to obtain.

corresponding figures for the population of graduating seniors. The average performance on the Economics Comprehensive of 2.43 falls about one standard error below the population mean of 2.60. (The Economics mean is low but not exceptionally low). As might be expected the grades of students taking the Economics Comprehensive were also low relative to their grades in the required courses for the major (index = 2.73) and to their grades in required 300 level courses (index = 2.71).

As low as the grades were on the Economics Comprehensive, they were raised appreciably by the students' performance on the Graduate Record Exam (mean = 632 or 90th percentile) which was given a weight of one-third in the determination of the Comprehensive grade. One student would have failed the Comprehensive but for a substantial score on the GRE.

Table IX indicates that forty-two per cent of the variation in the Comprehensive grades of Economics majors was associated with variation in cumulative indices. This figure is considerably larger than the corresponding twenty-five per cent covariation for the college as a whole. As expected, however, the correlations between the Economics Comprehensives grades and indices of required Economics courses was lower (r^2 = .34) and the correlation between Economics Comprehensive grades and indices of required 300 level courses even lower (r^2 = .32). If the data on Economics students can be used as a guide, we might guess that the percentage of variation in Comprehensive grades for the college as a whole which could be associated with variation in required courses in the major field, or with required

300 level courses in the major, was something less than twenty per cent in 1967.

Table IX shows that forty-one per cent of the variation in GRE scores was associated with variation in the indices of required 300 level courses. The corresponding covariation between required course indices and GRE scores was only twenty-nine per cent. The difference between these two r^2 values might possibly be explained by the two courses in accounting which are required at the 200 level. Probably of considerably more importance, however, was the late intellectual maturing of some of the Economics majors (e.g. Aigner, Wheeler, Fiddes, Winkler, Bastian). Many Economics majors do well in advanced courses and score high on the GRE who have mediocre records in their first course in the department.[10]

III

Conclusions and Recommendations

The pass-fail system at Knox College has neither worked as well as its proponents had hoped nor as badly as its opponents had feared. Some students use the system to gain credit in a course (or courses) with a minimum of effort, but there is much less of this under the three-three system than was the case under the semester system. Most students do considerably more work than is necessary to pass. As a means of encouraging students to undertake a broader and more rigorous program, the pass-

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[10] Hopefully, this maturing occurs throughout the college. It is one of the reasons why Economics majors as a group make such a fine showing on the GRE.

fail system has been only moderately successful. Its popularity with students seems to rest principally on (A) the relaxations of tensions when course requirements conflict, and (B) its use in the satisfaction of General Education requirements.

If we can justify the enthusiasm for experimentation in pass-fail as a positive force in the initiation of the system, we might have hoped for greater success of the program. Its foundations in student popularity are not particularly commendable. If pass-fail provides for relaxation of tensions when course requirements conflict, it also provides for relaxation when class attendance and sleeping conflict. While an atmosphere of reduced conflict may not be noticed most of the time, it becomes uncomfortably apparent at times; i.e., in the absenteeism at the 1967 Senior Convocation. As concerns the system's student popularity relative to the satisfaction of distribution requirements, the practice of allowing students to take courses specifically designed for General Education on a pass-fail basis is self-defeating. It undermines the basic purposes of pass-fail. The system is supposed to encourage students to take courses they might not otherwise take; i.e., to take basic physics rather than astronomy. To permit students to take astronomy pass-fail to satisfy a distribution requirement is not consistent with the original justifications of the experimentation.

The combination of the pass-fail system and the current accounting of Comprehensive grades permits seniors to take one course or less on a normally graded basis in the spring term. Considering the deterioration of

performance on the Comprehensive and the mediocre success of the pass-fail system, the continuation of the situation seems pointless, not to say dangerous. It would be supposititious to predict that these conditions will lead to excursions to the Mardi Gras, to generally sunnier climes, etc. by groups of students. Sufficient to say that only losers play the kind of game where there is little to gain and much to lose. We may enjoy the play, of course, but sooner or later we will lose.

The policy recommendations which follow from the above considerations of pass-fail is that the system should be modified rather than abandoned. On the one hand the program should be extended in two directions: (1) The requirement of an upperclass C average for participation should be removed. Pass-fail courses do not improve a student's grade average and are of no help to a student in meeting the upperclass C average graduation requirement.[11] (2) The privilege of pass-fail should be extended to all students. Students actually concerned with upgrading their portfolio of courses might well do so as freshmen, sometimes with better results. A few Economics majors, for example, have been encouraged to take calculus because of pass-fail. The results have been less than spectacular, but these same students might well have done better in the course in their early years at college. They were closer to their high school mathematics as freshmen than they were as seniors.

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[11] The 1968 Senior Class has the option of the old quality point system and some few of these students might improve their chance of graduation via pass-fail. There are not enough of these students to warrant a postponement of policy change, however.

On the other hand, the pass-fail system should be restricted in two directions: (1) The number of courses taken pass-fail should be limited to four. This would return the program to its original dimensions. If the pass-fail system is effective the large majority of students should take one or two courses pass-fail which they would not otherwise have taken. A substantial but relatively small percentage of students might take three or four such courses pursuant to the degree. To pretend that we are generally altering the course structure of a student's academic program by as many as five or six courses through the magic of pass-fail is to ignore the greater probability that many of these courses would have been taken in the absence of pass-fail. (2) Only those courses specifically declared to be requisite to a major should be taken pass-fail. This would permit a student to take courses such as Art 103, Biology 121, Economics 201, History 104, Math 151, Physics 101, etc. on a pass-fail basis whether the course was used to satisfy a distribution requirement or not. Courses such as Art 104, Biology 320, (at least as the course was structured last year), Economics 211, Physics 251, etc. should not be included in the pass-fail program whether they are used to satisfy a distribution requirement or not.

Seniors should not be permitted to take a course pass-fail in the term of their Comprehensive for the reasons discussed above. Eleven terms should be adequate to alter a student's academic program via pass-fail.

If the 1967 performance on the Comprehensive Examinations is a harbinger of what is to occur in future springs, we should return to a thirty-six

course graduation requirement. We have reduced the graduation requirement to thirty-five courses on the assumption that students do something in preparing for the Comprehensive which compares with what is done for one course credit. If it becomes generally true that students do little or nothing in preparing for the Comprehensive we will have debased the graduation requirement by requiring only thirty-five courses.

It may well be, of course, that the 1967 performance on the Comprehensive was merely a first year reaction to a change in regulations which will not be repeated. It might help to go through a generation of students with a stable Comprehensive program; it might also help if some departments would rid themselves of the preconception that no student will fail.

TABLE I

STUDENTS TAKING COURSES ON PASS-FAIL BASIS, CLASSIFIED BY AREA, 1965-66, 1966-67

Area	Enrollment 1965-66	Enrollment 1966-67	Per Cent Increase
Humanities	128	173	35.1
Science and Mathematics	50	141	182.0
Social Studies	65	64	-1.5
Total	243	378	55.5

Source: Office of Institutional Research
Knox College, July, 1967

TABLE II

FREQUENCY DISTRIBUTION AND MEAN GRADE INDEX OF STUDENTS TAKING PASS-FAIL COURSES, CLASSIFIED BY NUMBER OF PASS-FAIL COURSES TAKEN, 224 SENIORS AND 313 JUNIORS, KNOX COLLEGE, 1966-1967

Number of Pass-Fail Courses Taken	Seniors		Juniors	
	Number of Students	Mean# Index	Number of Students	Mean# Index
0	8	Below 2.00*	38	Below 2.00*
0	60	2.67	117	2.67
.5-1	64	2.65	94	2.67
1.5-2	49	2.88	52	2.77
2.5-3	26	2.90	12	3.12
3.5-4	12	3.00	--	--
4.5-5	5	3.01	--	--
	224		313	

Source: Office of Institutional Research
Knox College, July, 1967

* Not eligible to take courses pass-fail.

As of June, 1967.

TABLE III

STUDENTS TAKING COURSES ON PASS-FAIL BASIS TO SATISFY DISTRIBUTION REQUIREMENTS, CLASSIFIED BY AREA, 1965-66 AND 1966-67

Area	Enrollment 1965-66	Per Cent of Total Pass-Fail	Enrollment 1966-67	Per Cent of Total Pass-Fail
Humanities	41	32.0	58	33.5
Science and Mathematics	39	78.0	103	73.0
Social Studies	12	18.4	14	21.8
Total	92	40.3	175	38.9

Source: Office of Institutional Research
Knox College, July, 1967

TABLE IV

COMPARISON OF ACADEMIC PERFORMANCE OF STUDENTS TAKING BIOLOGY 320 ON PASS-FAIL BASIS WITH THE ACADEMIC PERFORMANCE OF STUDENTS BEING GRADED IN THE USUAL MANNER, SPRING, 1967

Performance Rating	Normal Enrollment	Pass-Fail Enrollment	Totals
A	13	3	16
B	16	18	34
C	12	29	41
D	0	2	2
F	0	0	0
I	1	0	1
	42	52	94

Source: Office of Institutional Research
Knox College, July, 1967

TABLE V

MEAN INDEX AND ACADEMIC PERFORMANCE RATING OF STUDENTS TAKING BIOLOGY 320, CLASSIFIED BY PASS-FAIL STUDENTS AND OTHER STUDENTS SPRING, 1967

	Number of Students	Mean* Cumulative Index	Mean Performance Rating
Pass-Fail	52	2.62	2.42
Others	42	2.42	3.02

Source: George Ward, Grade Report of Biol 320

*Grade Report, March, 1967

Significance of Difference Between Mean Academic Rating

$$t = \frac{3.02 - 2.42}{.138} = 4.36$$

Conclusion: Difference in performance of the groups cannot be attributed to random variation of students involved.

TABLE VI

PERFORMANCE IN OTHER COURSES OF 52 STUDENTS
TAKING BIOLOGY 320 PASS-FAIL, SPRING 1967

	Number of Units	Comprehensive Examination	Biology 320 (rating)	Total
A	25	2	3	30
B	37.5	10	18	65.5
C	25	9	29	63
D	2		2	4
F	1			1
Total	90.5	21	52	163.5
Index	2.92		2.42	2.73

Source: Office of Institutional Research
Knox College, July, 1967

TABLE VII

CORRELATIONS OF CUMULATIVE GRADE INDICES AND PERFORMANCE ON COMPREHENSIVE GRADUATING CLASS, 1966 AND 1967

	1966	1967
Mean Cumulative Index	2.77	2.60
Mean Index of Comprehensive Grades	2.78	2.60
Variance of Comprehensive Grades	.70	.57
r^2 *	.36	.25
Percentage of A's in Comprehensives	21.0	6.7

Source: Office of Institutional Research
Knox College, July, 1967

* Proportion of variation in comprehensive grades associated with variation in cumulative grade indices.

TABLE VIII

ARITHMETIC MEAN AND VARIANCE OF ACADEMIC PERFORMANCE: INDEX FOR REQUIRED COURSES IN MAJOR, INDEX FOR 300 LEVEL REQUIRED COURSES, INDEX FOR COMPREHENSIVE, GRADUATE RECORD EXAM SCORES; 23 ECONOMIC SENIORS, SPRING, 1967

Index	Mean	Variance
Cumulative	2.63	.19
Required Courses in Major	2.73	.24
Required 300 Level Courses in Major	2.71	.48
Comprehensive Exam	2.43	.66
Graduate Record Exam	632	4200

Source: Office of Institutional Research
Knox College, July, 1967

TABLE IX

CORRELATIONS OF ACADEMIC PERFORMANCE BY 23 ECONOMIC SENIORS, SPRING, 1967

Variables	r^2 *
x = Cumulative Indices y = Comprehensive Grades	.42
x = Required Course Indices y = Comprehensive Grades	.34
x = Required Course Indices y = GRE Scores	.29
x = Required 300 Level Courses y = Comprehensive Grades	.32
x = Required 300 Level Courses y = GRE Scores	.41

Source: Office of Institutional Research
Knox College, July, 1967

* Proportion of variation in y associated with variation in x.

APPENDIX I

November 3, 1967

Dear Colleague:

At the November Faculty Meeting, the Committee on Academic Status will recommend the following amendments to Faculty Regulation C 9.05. Because the additions and deletions are complicated if listed separately, I am providing you with the regulation as it reads in both its amended form and its original form. The underlined words in the amended paragraph are the additions and changes, and those in the original are the deletions and changes.

Amended Paragraph:

To encourage juniors and seniors to enroll for courses beyond their major field of study, they will be allowed to stipulate for one course a term, not to exceed a total of four courses, that the grade given will be either Pass or Fail. This privilege may not be applied to courses offered by the student's Major department nor to other courses used to fulfill requirements for the major nor to courses specifically designed for General Education. Students may not stipulate for a pass-fail course during the term in which they are enrolled for the Comprehensive Examination. Students should indicate at the time of enrollment that they wish to exercise this privilege and will themselves be responsible for making this decision a matter of record with the Registrar's office. Arrangements for altering this special grading procedure cannot be made after the deadline for the changing of courses. In calculating the student's grade index, the Registrar will treat pass credit in the same manner as transfer credit. Questions arising from the administration of this grading policy may be referred to the Committee on Academic Status.

Current Regulation:

To encourage juniors and seniors to enroll for courses beyond their major field of study, they will be allowed to stipulate for one course each term that the grade given will be either Pass or Fail. This privilege may not be exercised by a student with an upperclass average of less than 2.0 and may not be applied to courses offered by the student's Major department nor to other courses used to fulfill requirements for the Major. Students should indicate at the time of enrollment that they wish to exercise this privilege and will themselves be responsible for making this decision a matter of record with the Registrar's office. Arrangements for altering this special grading procedure cannot be made after the deadline for the changing of courses. In calculating the student's grade index, the Registrar will treat pass credit in the same manner as transfer credit. Questions arising from the administration of this grading policy may be referred to the Committee on Academic Status and that committee is required after a trial of two years to report on this subject to the Faculty.

The Committee also recommends that whatever amendments are voted should not go into effect until the Spring Term, 1968.

Donald W. Sanville
Chairman, Committee on Academic Status

APPENDIX I

QUESTIONS AND ANSWERS RELATING TO THE ACADEMIC STATUS COMMITTEE'S PROPOSALS TO MODIFY THE PASS-FAIL SYSTEM

1st Proposition: Students should not be allowed to take courses specifically designed for General Education on a pass-fail basis.

Question: Why not?

Answer: The purpose of the pass-fail system as stated in the faculty regulations is "to encourage juniors and seniors to enroll for courses beyond their major fields of study". During the two year trial period, however, one-fifth of the courses taken pass-fail in social studies, one-third of the courses taken pass-fail in humanities and three-fourths of the courses taken pass-fail in science and mathematics were taken to satisfy distribution requirements. Most of these courses would have been taken in the absence of the pass-fail system.

Question: Why not rule out of the pass-fail program all courses used to satisfy a college requirement?

Answer: The underlying purpose of the pass-fail system is to encourage students to take courses they would not otherwise take because of a fear of lowering their grade average. Generally students take courses designed for non-majors in satisfying distribution requirements. The present proposal would encourage students to take basic courses in the individual disciplines to satisfy distribution requirements, courses non-majors are reluctant to take for a grade. If a student elects to take Art 103 instead of Art 104, Music 101 rather than Music 106, Economics 201 rather than Economics 211 or Physics 111 rather than Physics 251 because of the pass-fail system, the underlying basis for the system has not been undermined but substantiated.

Question: Would not the present proposal shift large numbers of students away from the General Education courses specifically designed to handle large numbers of students?

Answer: To date only a relatively small number of students have been encouraged to take courses pass-fail they would not otherwise have taken. There is no immediate prospect that this situation will change. The likely effect of the proposal is that the numbers of students taking courses pass-fail will be substantially reduced and that the number of students taking courses prepared for non-majors will not be reduced. The prospective growth of the student body will provide ample numbers of students for the "General Education" courses.

2nd Proposition: The total number of courses a student can take pass-fail should be reduced from six to four.

Question: Why?

Answer: The pass-fail system was introcuced under the semester system with the stipulation that juniors and seniors with an upperclass index 2.00 or above could take one course each term. This meant that a student would normally take no more than four courses on a pass-fail basis. The change to the three-three system automatically expanded the number of courses that could be taken pass-fail to six. The proposal is to return the program to its original dimensions.

3rd Proposition: The eligibility requirement of a 2.00 upperclass index should be dropped.

Question: Would not the elimination of the C average requirement open the pass-fail program to students who would take courses pass-fail for "cheap" credit?

Answer: At the time the pass-fail system went into effect all juniors and seniors had the option of the old quality point accounting in graduation requirements. A grade of "pass" would have reduced the number of quality points needed for graduation, and it would have been possible for a student who was behind on quality points to make up ground with a grade of "pass". The present requirement of an upperclass C average means that a student who is behind in grade points earned cannot make up ground with a grade of "pass".

Our experience has been that better students are more eager to take courses pass-fail than mediocre students. The adoption of the first proposition above would virtually restrict the pass-fail program to the better students.

4th Proposition: A student should not be allowed to take a course pass-fail during the term of their comprehensive.

Question: Why not?

Answer: A student taking a course pass-fail in the term of his comprehensive may be taking only one course which would count in his grade index. Neither the performance of students in pass-fail courses nor the performance of students on comprehensives warrants this possibility.

THE ABOVE PROPOSITIONS WERE DEVELOPED BY THE COMMITTEE ON ACADEMIC STATUS AFTER CONSIDERATION OF A REPORT ON THE PASS-FAIL SYSTEM BY THE OFFICE OF INSTITUTIONAL RESEARCH. FACULTY MAY OBTAIN THIS REPORT UPON REQUEST AT THE REGISTRAR'S OFFICE.

Committee on Academic Status
November, 1967

APPENDIX I

To encourage juniors and seniors to enroll for courses beyond their major field of study, they will be allowed to stipulate for one course a term, for a maximum of four courses, that the grade given will be either Pass or Fail. This privilege may not be exercised by a student with an upperclass average of less than 2.0 and may not be applied to courses offered by the student's Major department nor to other courses used to fulfill requirements for the major nor to courses specifically designed for General Education. Students may not stipulate for a pass-fail course during the term in which they are enrolled for the Comprehensive Examination except on approval of the Dean of the College.

APPENDIX I

Modification of the Pass-Fail System

Effective the spring term of 1968:

1. Students who have already stipulated for four or more courses on a pass-fail basis will not be allowed to elect additional courses on a pass-fail basis.

2. Students who are enrolled for the Comprehensive Examination may not elect a course pass-fail unless permission is obtained from the Office of the Dean of the College. (Permission would be granted in the case of students taking an overload in order to graduate.)

3. Students will not be allowed to elect courses on a pass-fail basis which have been specifically designed as General Education Courses. The following courses may not be stipulated as pass-fail:

   Art 104, 106
   Biology 111, 320
   Chemistry 300
   Economics 103, 211, 212
   English 101
   History 104, 105, 106
   Humanities 201, 202
   All 100 level languages (unless the student has satisfied the language requirement)
   Mathematics 101, 102, 123, 131
   Music 106
   Physics 251, 252, 253
   Political Science 141

APPENDIX II

PRELIMINARY INVESTIGATION OF THE RELATIONSHIP OF ENTERING PROFILE TO CUMULATIVE INDEX FOR THE KNOX GRADUATE, SEPTEMBER, 1965, TO DATE

The accompanying scatter diagrams relating specific entering profile information to the cumulative index of recent Knox graduates, classified by area of the major, were plotted by IBM 1130 computer as a preliminary step in developing appropriate multiple correlation analyses. They serve as a visual check on the linearity between independent and dependent variables. SAT Math scores, SAT Verbal scores, and high school class rank are the basic independent variables, each being taken in relationship to cumulative index at graduation. Classification of these data by area of the major--humanities, social studies and science and mathematics--provided Charts I-IX. The remaining three charts relate entering profile information to the first year index of those Knox students represented in the Academic Register file. (Students whom we expected to return in September, 1965, when data processing was introduced at Knox, and all students entering thereafter. Current freshmen were excluded on the basis that their first year indices will not be computed until June.) The first nine charts relate to graduates while the remaining three charts pertain to graduates, current students, and students withdrawing or dropping out of the college since September, 1965.[1]

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[1] Entering profile data for Knox College graduates do not differ significantly from the corresponding data for entering classes. Comparison of SAT Scores and High School Class Rank of Freshmen Entering Knox College, Fall, 1962, With Knox Graduates Who Entered, Fall, 1962. Office of Institutional Research, January, 1968

In the conclusions below the relationship between SAT scores and cumulative indices will be referred to as Math-Cum and Verbal-Cum.

I. Humanities

Charts I and II indicate the relationship between Math-Cum and Verbal-Cum respectively for graduates majoring in the Humanities. In both cases the relationship is linear. The variance of the Math boards is higher than the variance of the Verbal boards, and the correlation[2] with Cum less. The slopes of the regression lines for Math-Cum and Verbal-Cum are both substantially positive. No graduate majoring in Humanities who had a Math board of 600 or more had less than a C average at graduation. On the other hand, none of the seven graduates majoring in Humanities who had a Verbal board of 750 or more graduated with less than a B average. The only graduates in this area with a Math board of 750 or more who earned as much as a B average also had a Verbal board of 750 or more.

As is the case for all the charts relating board scores to cumulative indices, the concentration of observations in the upper-right hand portion of the quadrant is to be expected. Students having much below a 2.00 index do not graduate while a few presenting board scores below 400 are admitted.

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[2] The amount of the variation in cumulative indices which can be associated with variation in Math scores is less than the amount of the variation in cumulative indices which can be associated with variation in Verbal scores.

Chart VII indicates the scatter of high school class ranks for graduates majoring in the Humanities was high. The correlation of this variable with cumulative indices is slight, and the relationship is probably not linear.[3]

It should be noted that a 0.00 class rank means that the student graduated in the upper two per cent of his high school class. The basic heterogeneity of the class rank data is reflected in the fact that the students falling in the 0.00 high school class rank category had a greater range of cumulative indices at graduation than was the case for any other class rank category.[4]

II. Social Studies

Charts III and IV relate Math-Cum and Verbal-Cum for graduates majoring in social studies. The linearity of both relationships is questionable. The Math scatter is large relative to the Verbal scatter, and the correlation of Math-Cum is less for the Social Studies graduate than for the graduates of other areas.[5]

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[3] A correlation coefficient based on the deviations from a curved line computed as $Yc = a + bX + cX^2$ would probably be larger than a correlation coefficient computed from a straight line as $Yc = a + bX$.

[4] Appendix I shows a break down of mean entering profile data classified by type of high school: large public, small public, private, and parochial. Observe that the average student entering Knox College from a private school does not rank in the upper half of his high school class.

In the final correlation studies to be made with these data, class rank data will probably be weighted by a high school rating. Alternatively, high school rating may be introduced as an additional independent variable.

[5] Perhaps the Social Studies area is less homogeneous than the other areas.

Chart VIII shows even less correlation between class rank and cumulative indices than was the case for Humanities graduates. In general, however, the remarks made concerning the class rank distribution in the discussion of Humanities apply also to the Social Studies graduate.

The data on the Social Studies graduate indicate some aspects of weakness in the area. Consider the following: (1) No Social Studies graduate had verbal score as high as 750; seven graduates had Math boards of 750 and above, the smallest number for any area. The performance of these Social Studies graduates in terms of cumulative index was quite varied. (2) Seven students majoring in Social Studies had Math boards above 600 and graduated with less than a C average, most of these with substantially below a C average. The corresponding figure for the other areas combined is two. (3) Social Studies graduates had a total of ten Math or Verbal scores below 400; the corresponding figure for the other areas combined, four. (4) Thirteen Social Studies graduates ranked in the lower half of their high school class. Only three Humanities graduates and two Math and Science graduates ranked in the lower half of their high school class.

The above observations suggest the following generalizations: (1) Few students with very high boards major in Social Studies. (2) Most of the capable students who drag through college doing the minimum to graduate major in Social Studies. (3) The poorer prep school student who manages to graduate from Knox tends to major in Social Studies.

III. Math and Science

Chart V shows that the mean Math board is relatively high and that the variance of the Math boards is relatively low for Math and Science graduates as compared with graduates in other areas. Chart VI indicates that the Verbal boards for Math and Science graduates are more varied than their Math boards. The Math-Cum and the Verbal-Cum relationships are linear.

The class rank distribution for these graduates has a much smaller variance than is the case for graduates of other areas. The performance of students ranking in the upper two per cent of their high school class tends to be good for graduates in this area. The relationship appears to be linear for Class Rank-Cum data.

IV. Entering Profiles and First Year Indices

As indicated in Charts X-XII, the scatter of first year indices is much greater than the scatter of cumulative indices for graduates. The correlations of the entering profile variables with first year performance is slight. The Math-First Year Cum and Verbal-First Year Cum relationships are linear. The Class Rank-First Year Cum is not linear, but probably would be if the data were classified by the type of high school

The number of reasonably bright students with good high school records who have difficulty in their first year at Knox College is high. It is very clear that we need more predictor variables in academic advising than are available from profile information. Advisers who identify profile data

with capability might profit by thinking of capability in terms of the broader connotations of the word.

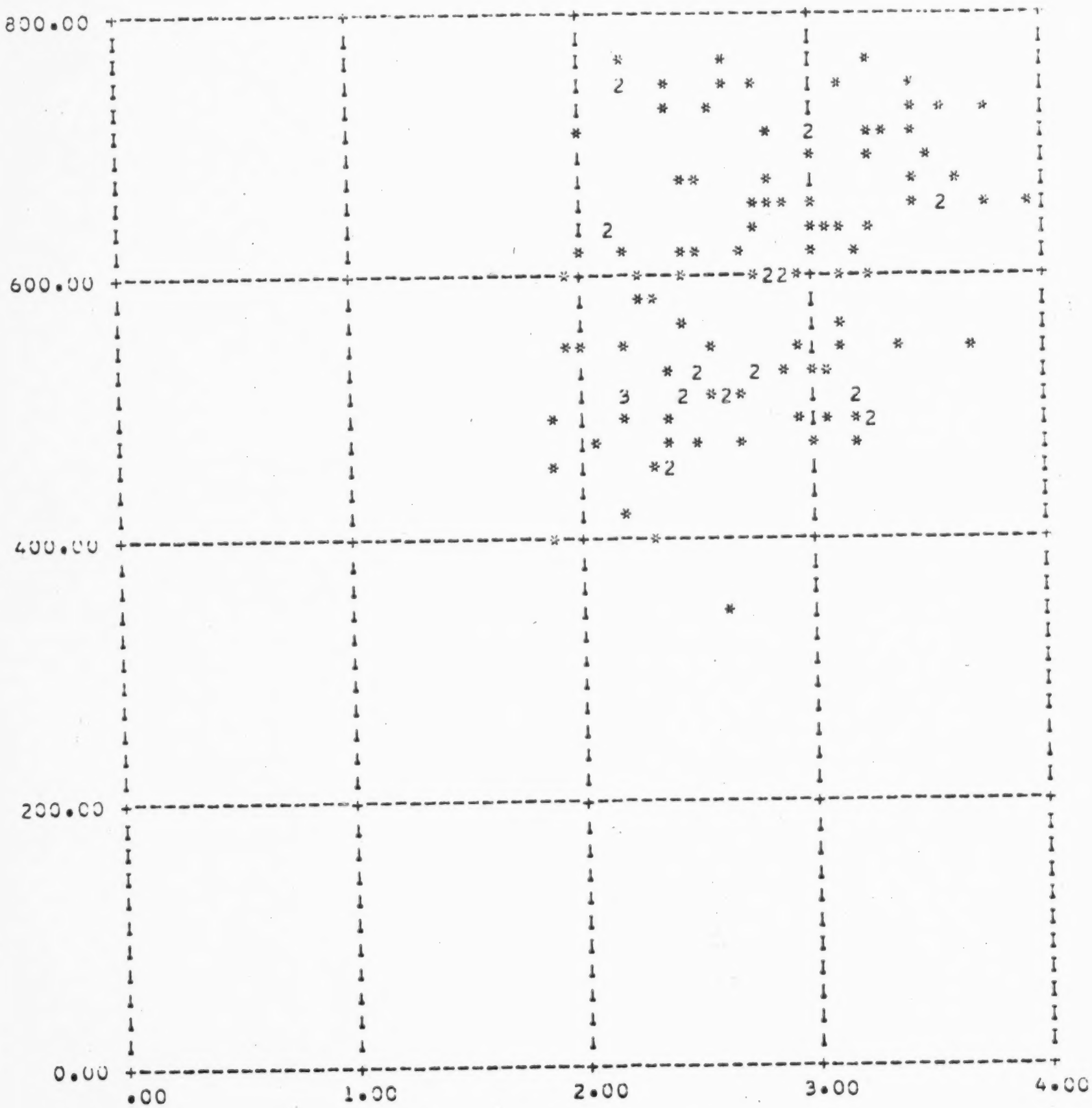
Most of the students falling in the lower 5/8ths of Charts X and XI and all of the students falling in the lower half of Chart XII are identified to advisers as having been "admitted with reservations" with the hope that they will be prevented from taking certain courses and course sequences in the freshman year. This accounts for the smaller variance of performance of these students. A much smaller percentage of this group does very well in the freshman year than is the case with students with strong entering profiles. On the other hand, a large majority of these students finish their freshman year with an index of 1.5 or more. This was not the case before the admissions with reservations program was started.

Only a small percentage of our entering students fall into the AWR categories. Nevertheless, it is worth observing that most of the students who are in academic trouble after the freshman year are students whom we did not expect to be in academic trouble. Optimism in advising is a mistake.

George L. Melville
March, 1968

App. II

CHART I
SCATTER DIAGRAM OF SAT MATH SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN HUMANITIES,
SEPTEMBER, 1965, TO DATE



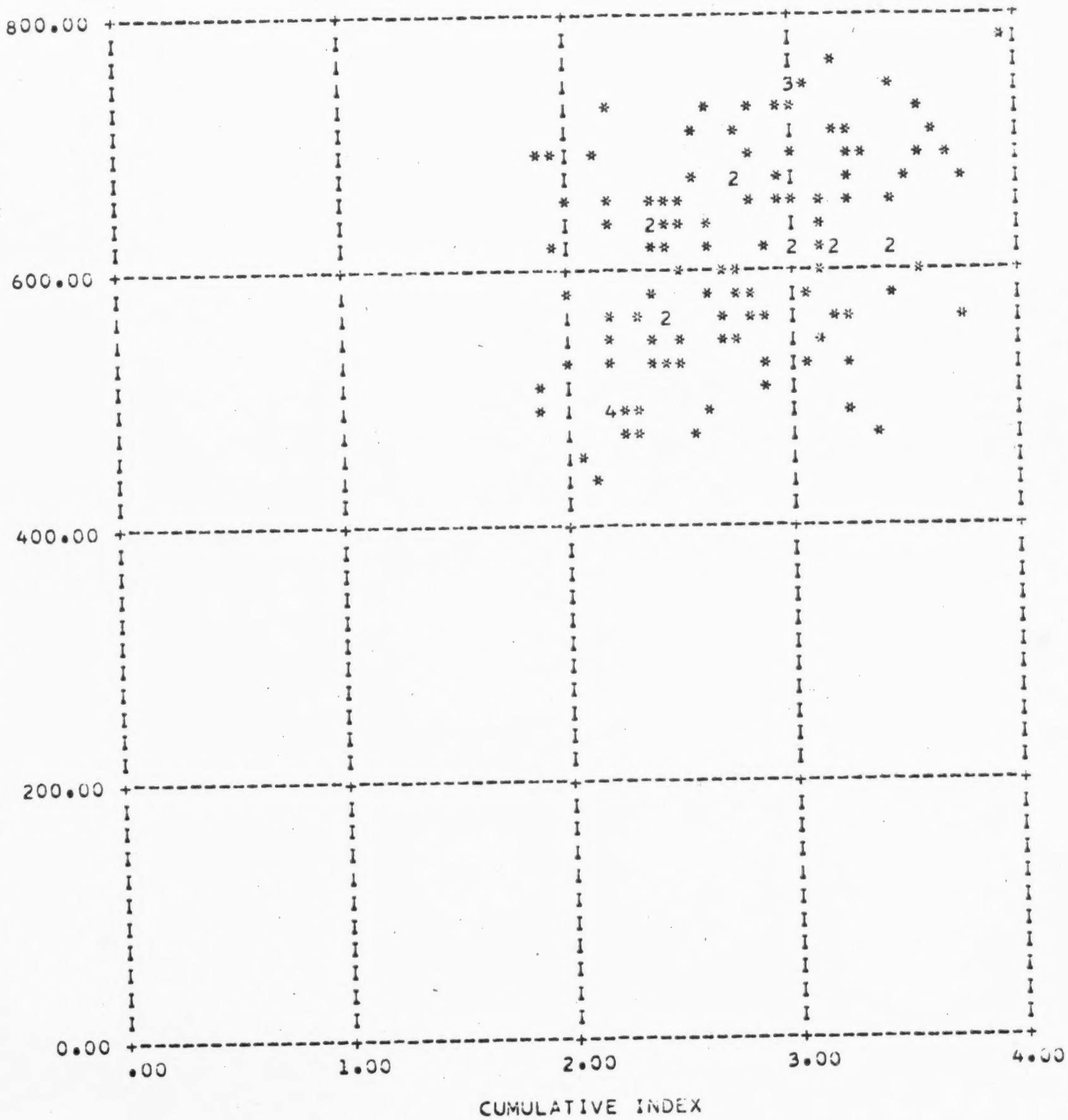
* 117 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1969

App. II

CHART II

SCATTER DIAGRAM OF SAT VERBAL SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN HUMANITIES,
SEPTEMBER, 1965, TO DATE

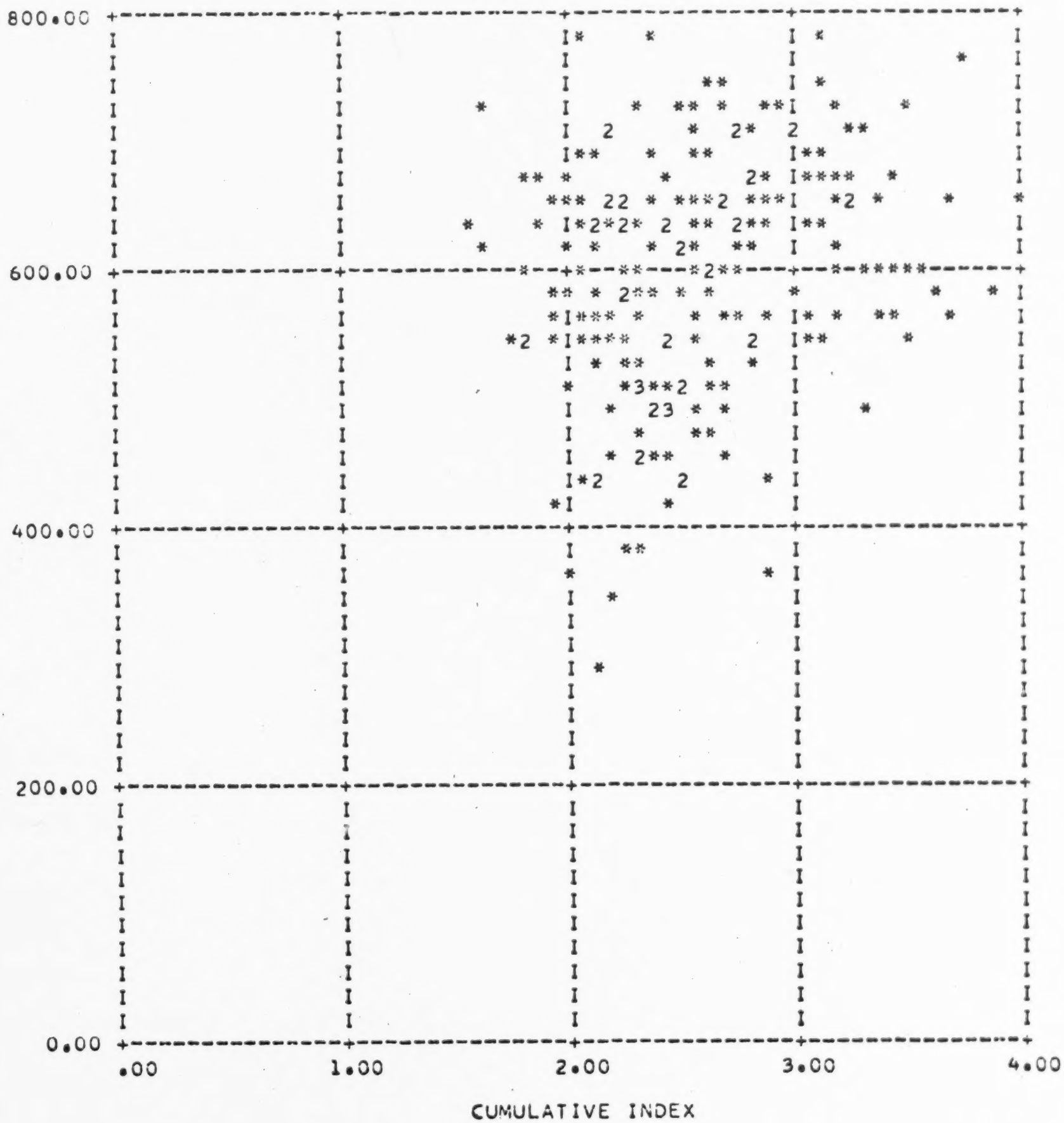


* 117 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART III
SCATTER DIAGRAM OF SAT MATH SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN SOCIAL STUDIES,
SEPTEMBER, 1965, TO DATE



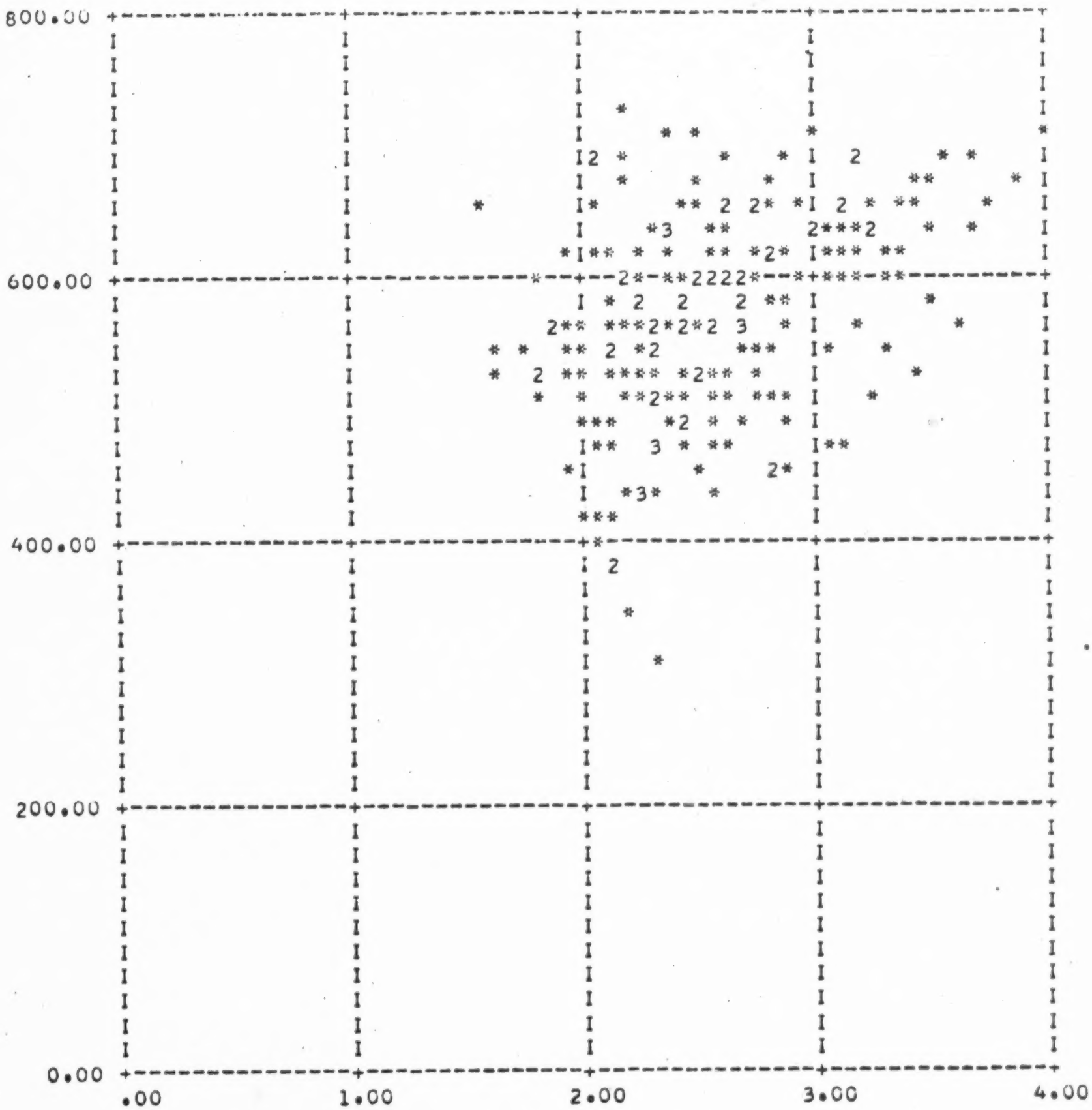
* 201 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART IV

SCATTER DIAGRAM OF SAT VERBAL SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN SOCIAL STUDIES,
SEPTEMBER, 1965, TO DATE

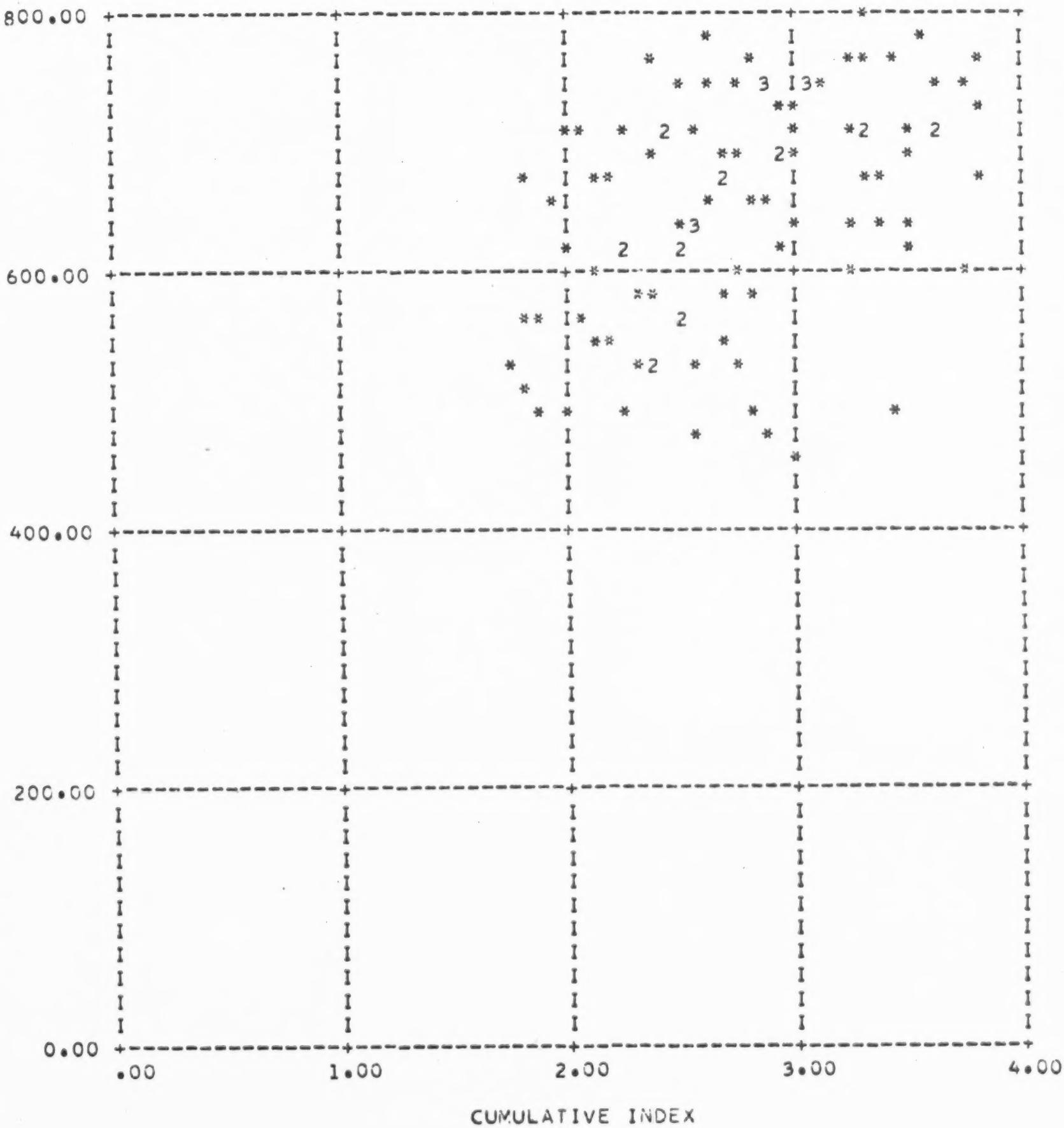


* 201 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

CHART V

SCATTER DIAGRAM OF SAT MATH SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN SCIENCE AND MATH,
SEPTEMBER, 1965, TO DATE



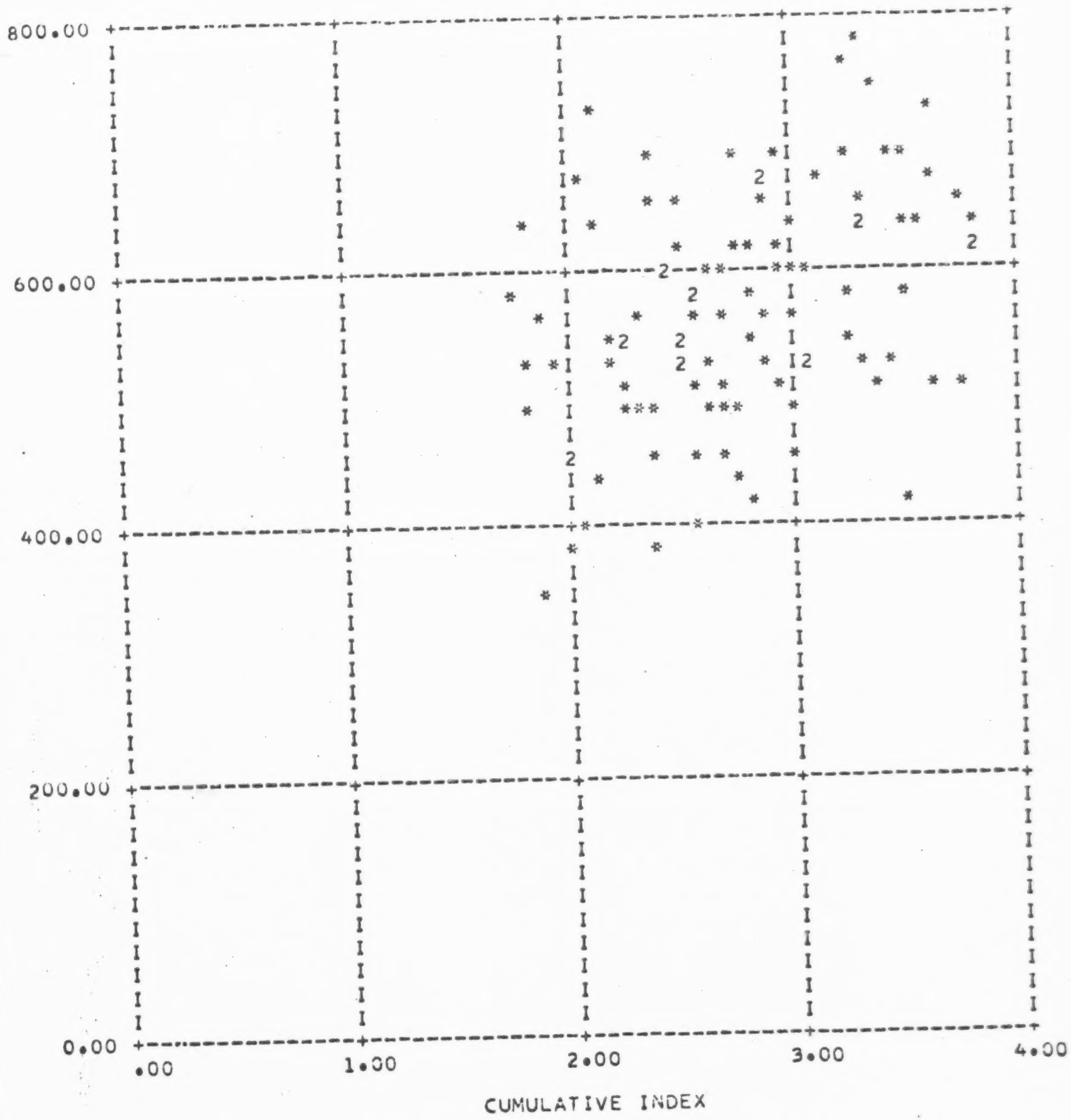
* 102 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART VI

SCATTER DIAGRAM OF SAT VERBAL SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN SCIENCE AND MATH,
SEPTEMBER, 1965, TO DATE

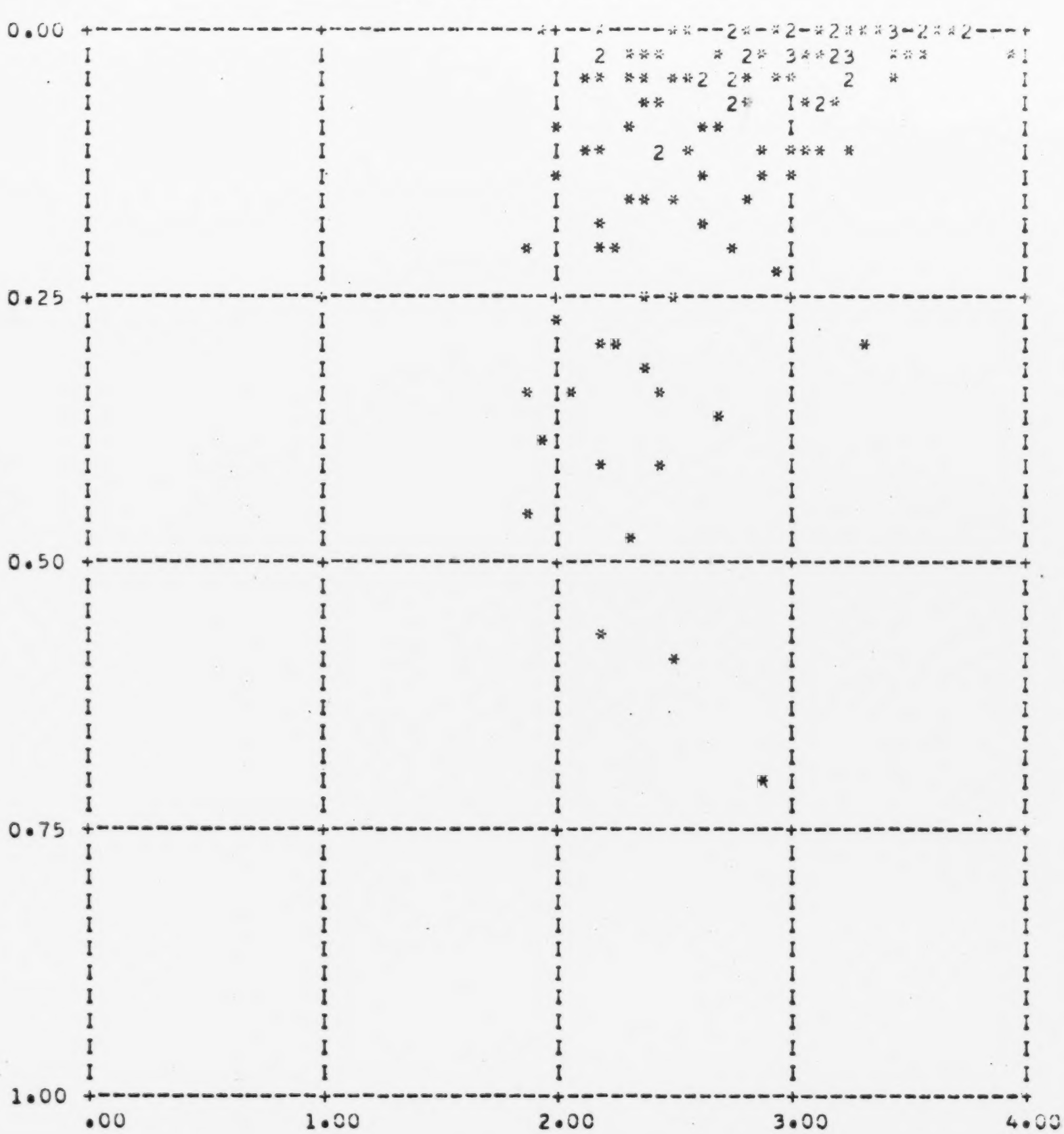


* 102 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART VII
SCATTER DIAGRAM OF CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN HUMANITIES,
SEPTEMBER, 1965, TO DATE

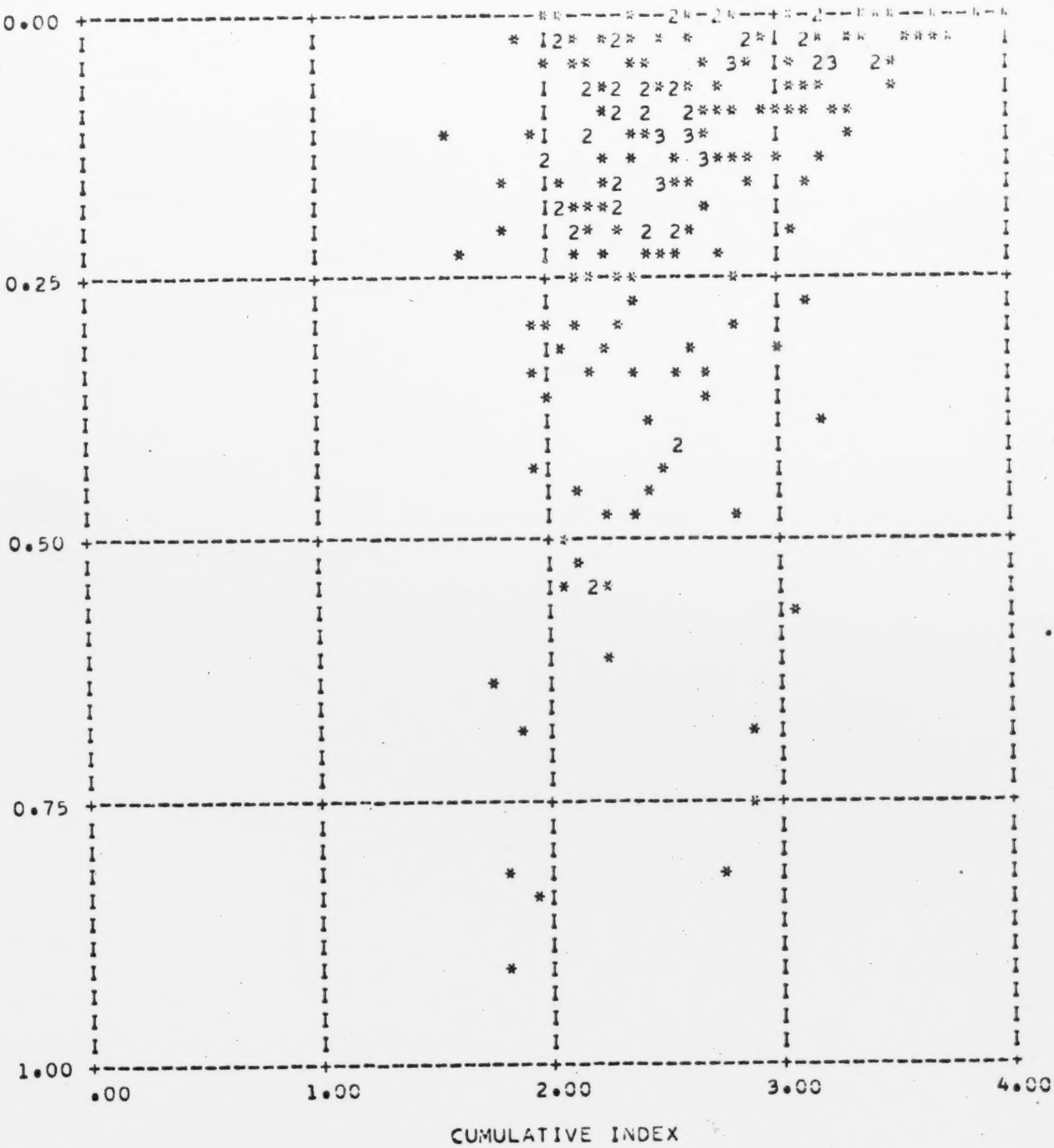


* 121 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

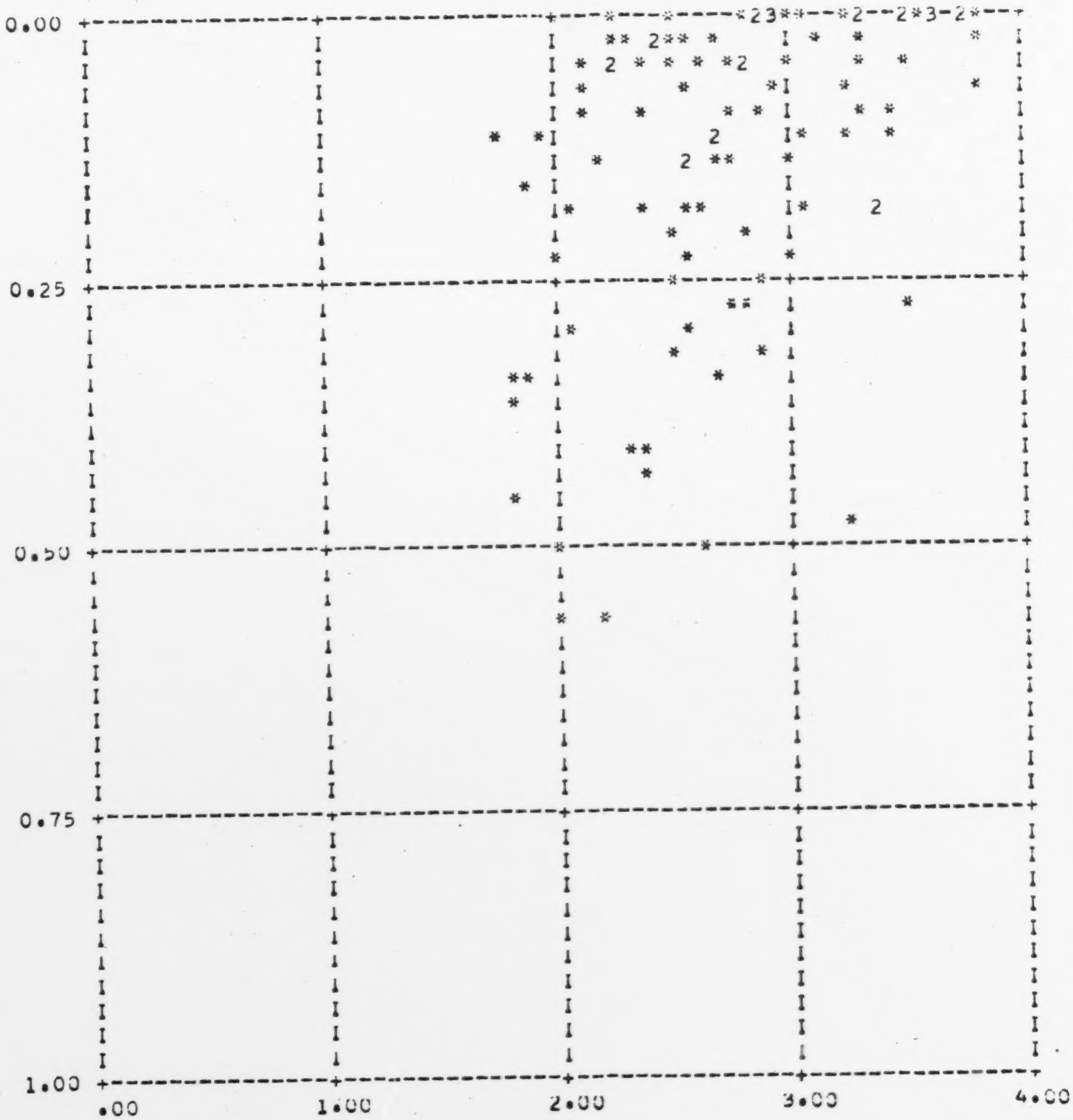
CHART VIII
SCATTER DIAGRAM OF CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN SOCIAL STUDIES,
SEPTEMBER, 1965, TO DATE



* 206 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

CHART IX
SCATTER DIAGRAM OF CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN SCIENCE AND MATH
SEPTEMBER, 1965, TO DATE

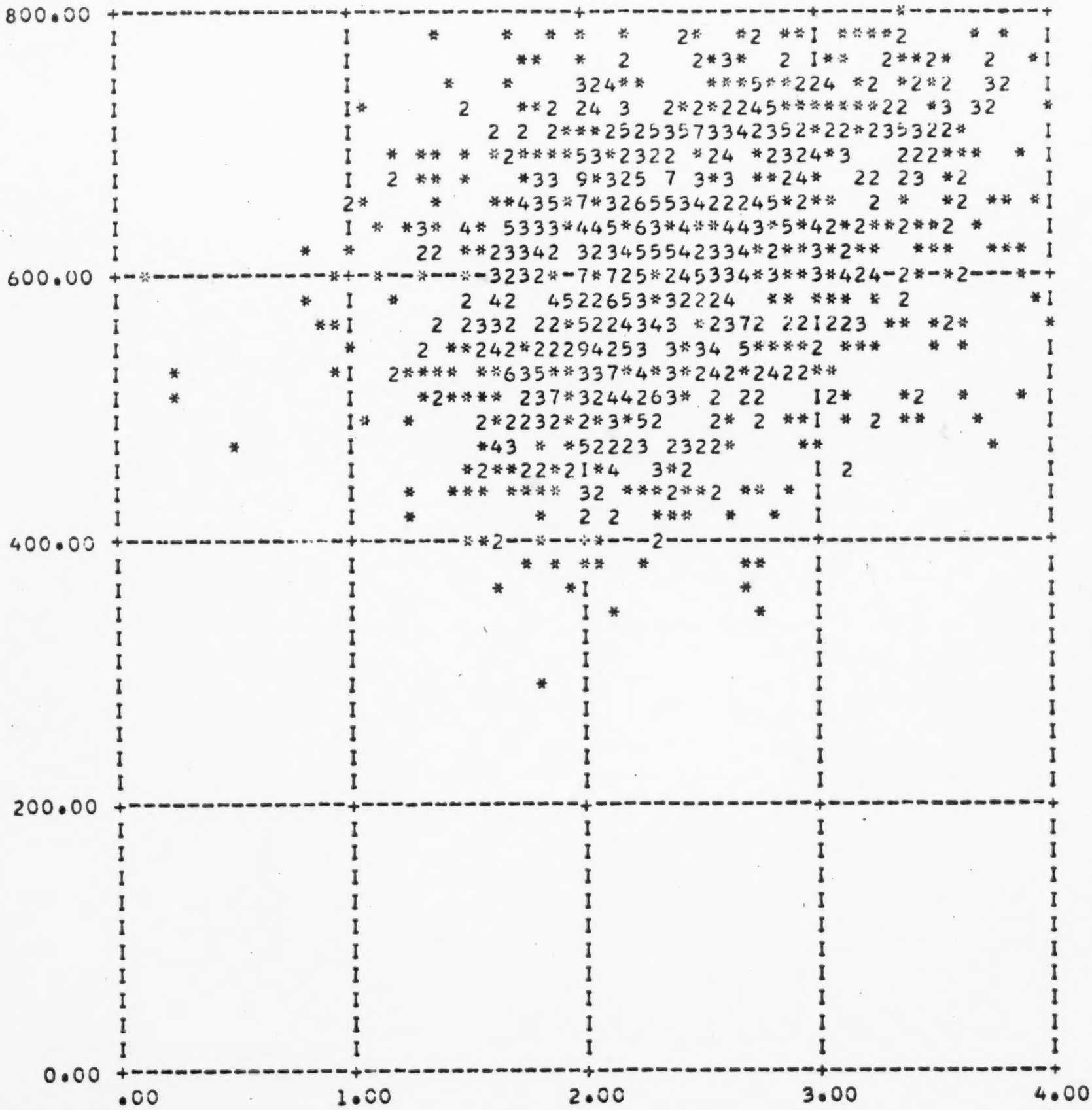


* 103 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART X
SCATTER DIAGRAM OF SAT MATH SCORES AND FIRST
YEAR INDICES, STUDENTS* ATTENDING
KNOX COLLEGE, 1962-1967

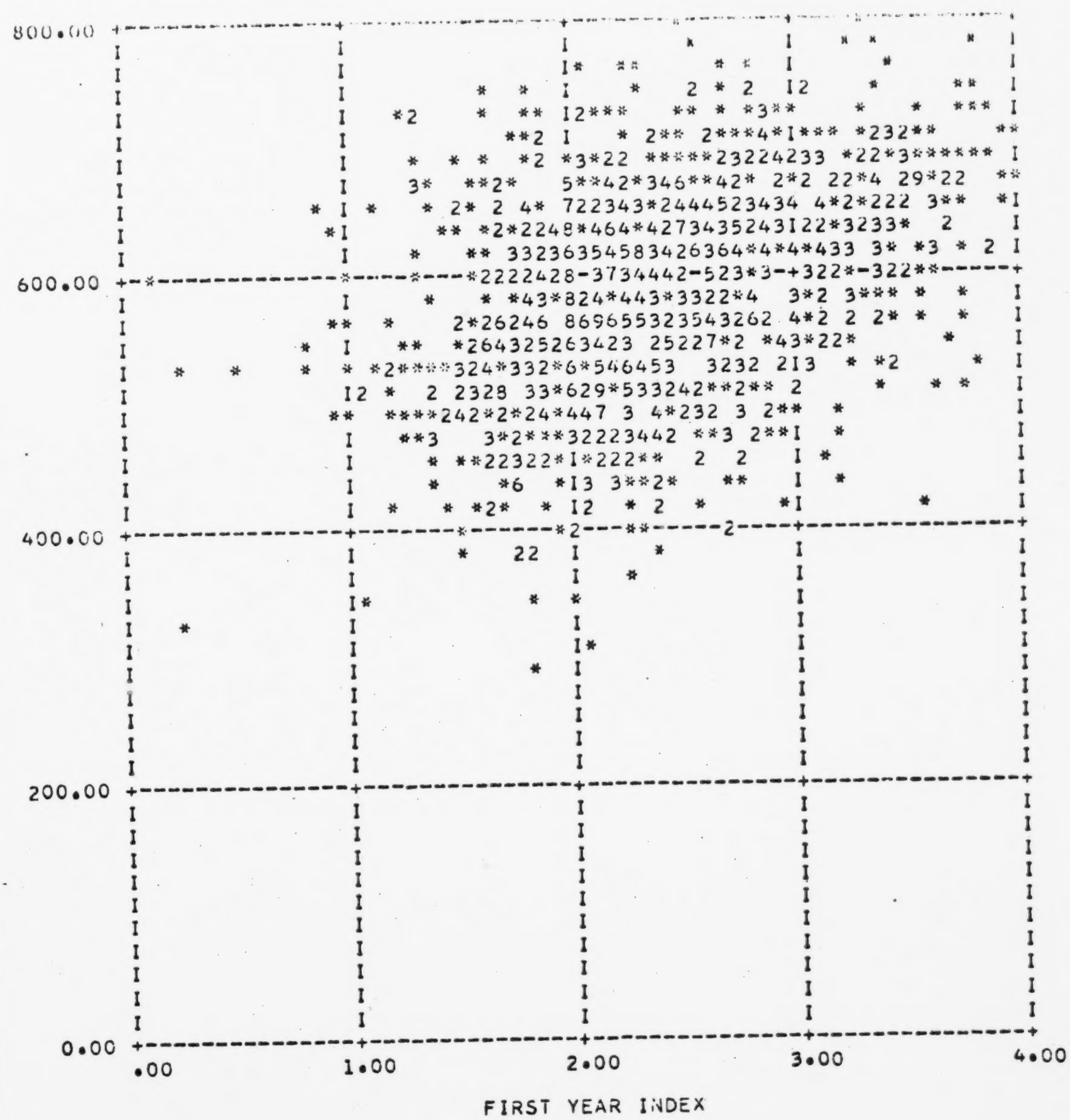


*1207 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART XI
SCATTER DIAGRAM OF SAT VERBAL SCORES AND FIRST
YEAR INDICES, STUDENTS* ATTENDING
KNOX COLLEGE, 1962-1967

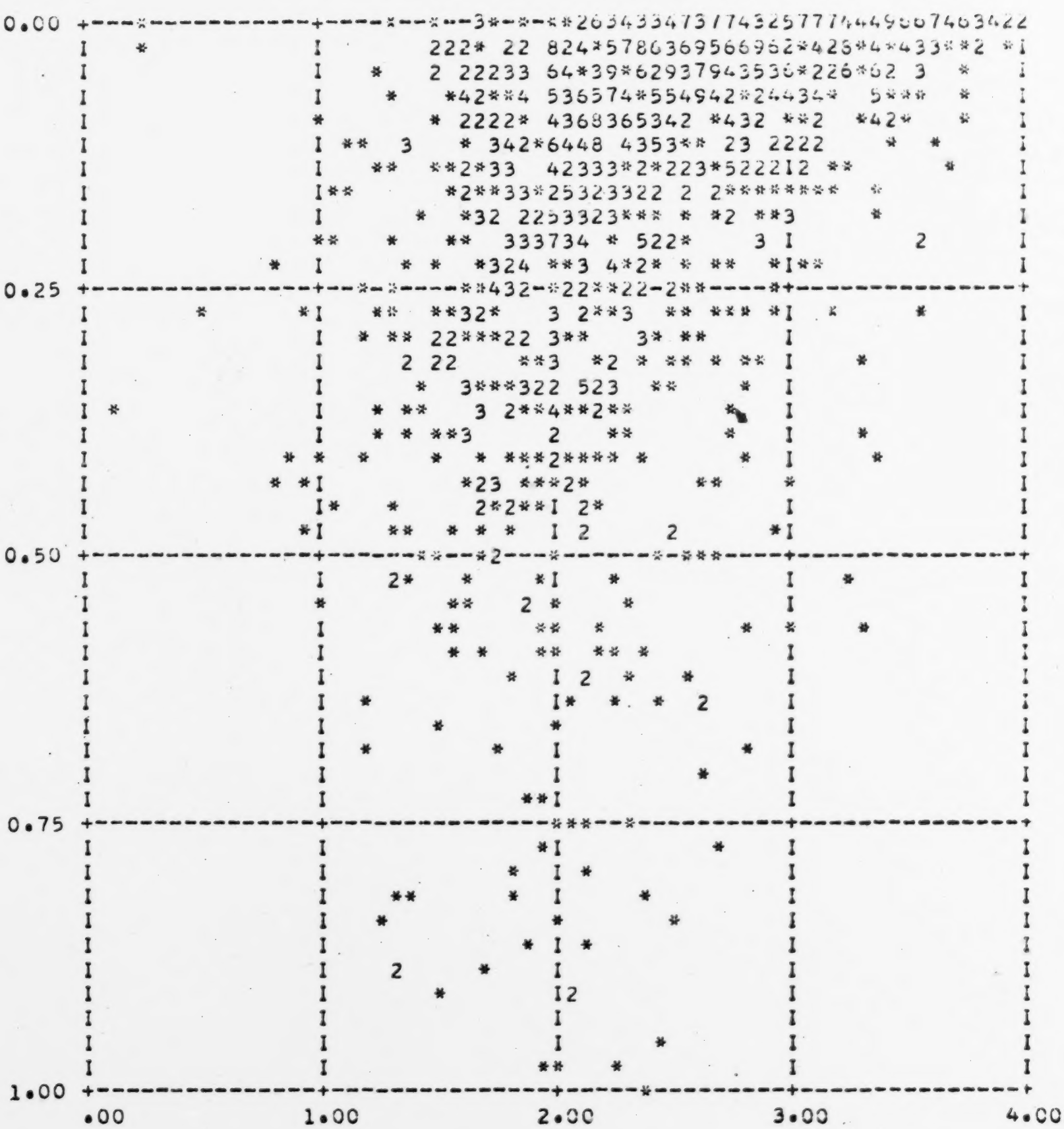


*1207 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

App. II

CHART XII
SCATTER DIAGRAM OF CLASS RANKS AND FIRST
YEAR INDICES, STUDENTS* ATTENDING
KNOX COLLEGE, 1962-1967



*1204 STUDENTS

SOURCE - COMPUTER CENTER, MARCH, 1968

APPENDIX I

SUMMARY OF ACADEMIC REGISTER FOR 1966-67

Type of School	Number of Schools	Number of Students	Mean CEEB V	Mean CEEB M	Mean* Class Rank	Mean Cum. Index
Public (100 or over)	473	1431	579	603	16.1	2.49
Public (under 100)	89	124	565	599	13.3	2.45
Private	103	145	559	581	51.3	2.20
Parochial	28	49	572	572	19.9	2.43
All Schools Total	693	1749	576	600	16.5	2.47

Source: Office of Institutional Research
March, 1968

*Percentage

APPENDIX II-A

COMPARISON OF SAT SCORES AND HIGH SCHOOL CLASS RANK
OF FRESHMEN ENTERING KNOX COLLEGE, FALL, 1962,
WITH KNOX GRADUATES WHO ENTERED, FALL, 1962

Office of Institutional Research
December, 1967

The accompanying data provide a preliminary comparison of entering class profile with corresponding information on the graduates of that entering class. It should be noted that the conclusions drawn at this present stage of analysis are necessarily tentative because the two distributions under consideration are not strictly comparable. Thus the data on the class of students entering in the fall of 1962 pertain to freshmen only while the data on graduates pertain to all students who entered in the fall of 1962. Continuation of this study will provide for a strict comparison of the distributions plus an analysis of the performance of transfer students.

Tentative Conclusions

SAT Scores: There is no significant difference in the average SAT scores of graduates and the average SAT scores of entering freshmen. The attrition of students with lower scores is balanced, on the average, by the attrition of students with higher scores. Unfortunately the complete distribution of scores for students entering in September, 1962, is not available. At that time such data were compiled by the Admissions Office in the form of a profile statement of means. The distribution of scores for graduates who entered in 1962, however, may have a larger variance than the total distribution of students who entered. On the lower extreme 3.2 percent of the total board scores were 400 and below. For the classes entering in the fall of 1964, 1965, and 1966 only 1.2 percent of the scores were 400 and below. At the other extreme for the distribution of graduates 10.5 percent of the scores were above 700. For the classes entering 1964-66 the corresponding percent was 9.5. Such comparisons of course, are extremely close to guess work. We are comparing different groups of students, and

it may well be that the variance of the entering classes has fallen since 1962. The only concrete value of such guesses lies in the provision of hypotheses which may be tested in a study of the class entering 1964 for which comparable data will some day be available. It should also be noted that graduation requirements have changed since 1962. Generalizations which may derive from an examination of students entering at that time may not be true for students entering at present.

High School Class Rank: Table II indicates that fifty-six percent of the graduates who entered in the fall of 1962 were in the upper ten percent of their high school class. Fifty-one percent of the freshmen entering in the fall of 1962 were in the upper ten percent of their high school class. Treating these percentages as randomly distributed variables we can measure this .05 difference against a standard error of the difference equal to .06. Thus $t = .05/.06 = .83$. The difference, therefore, cannot be regarded as having any considerable significance. Again, it must be pointed out that the groups being compared are not strictly comparable because of the presence of transfer students in the distribution of graduates.

George Melville

TABLE I

DISTRIBUTION OF SAT SCORES CLASSIFIED BY SEX, 209* GRADUATES WHO ENTERED KNOX COLLEGE, SEPTEMBER, 1962

SAT Score	NUMBER OF MEN		NUMBER OF WOMEN		TOTAL	
	Verbal	Math	Verbal	Math	Verbal	Math
251-325	1	0	0	1	1	1
326-400	4	1	2	4	6	5
401-475	7	5	8	13	15	18
476-550	32	12	29	32	61	44
551-625	28	30	34	29	62	59
626-700	26	36	22	17	48	53
701-775	7	21	8	7	15	28
776-850	0	0	0	0	0	0
Totals	105	105	103	103	208	208

Source: Office of Data Processing, December, 1967 and Computer Center.

*Scores unknown for 1 student.

	MEAN SCORES		STANDARD DEVIATIONS	
	Verbal	Math	Verbal	Math
Men	569.8	628.0	87.9	82.2
Women	575.8	559.3	81.5	94.9
Total	572.8	594.0	84.9	95.1

TABLE II

PERCENTAGE DISTRIBUTION OF HIGH SCHOOL CLASS RANK, FRESHMAN ENTERING FALL, 1962, AND GRADUATES* WHO ENTERED FALL, 1962

	Entering Freshmen	Graduates
Upper Ten Per Cent	51.0	56.0
Upper Twenty-five Per Cent	81.5	84.0
Upper Fifty Per Cent	96.5	96.6

Source: Office of Data Processing and Computer Center, December, 1967

*Includes transfer students entering Fall, 1962

APPENDIX III

ANALYSIS OF GRADES FOR STUDENTS TAKING COURSES PASS-FAIL AT KNOX COLLEGE, SPRING TERM, 1967-68

The accompanying sheets indicate the grades turned in by faculty for students taking courses on a pass-fail basis this past term. Classifying the grades we have 1 A, 27 B's, 39 C's, 9 D's, and 5 F's. Not counted in this distribution were the grades on students taking Cinema Seminar on a special pass-fail basis. All fifteen students involved were given D's.

Summary Conclusions

1. Our revision of the pass-fail system reduced the number of courses students were taking on a pass-fail basis.

2. Only five students took a math or science course on a pass-fail basis.

3. The grade in Cinema Seminar given pass-fail students seems to be automatic and undeserving of college credit.

4. Ignoring the P and I grades turned in as well as the Cinema Seminar grades, about seventeen percent of students taking courses pass-fail work at the D and F level. About ten percent of the students do work at the D level. These percentages are twice as high as the comparable figures for juniors and seniors taking courses on a normally graded basis. It might be pointed out that the low grades were made in reasonably difficult courses by students who were non majors.

George Melville
June, 1968

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NAME	COURSE		DESCRIPT	GRADE
	PSY	203	STAT EXP PROC	A
	HIST	311	RENAIS + REFOR	B+
	PS	241	POL PAR PR GR	B+
	PHIL	340	PHIL OF SCIENCE	B+
	ENG	320	ST OF LANG	B+
	ART	103	FORM AND EXP	B+
	ENG	320	ST OF LANG	B+
	PS	302	JURISPRUDENCE	B
	GRP	111	AM NEGRO HIST	B
	PHIL	360	PHIL OF REL	B
	MUS		PIANO	B
	EDUC	369 1	HIST + PHIL	B
	ENG	201	EXPOS WRIT	B
	EDUC	369 2	HIST + PHIL	B
	PHIL	360	PHIL OF REL	B
	ENG	201	EXPOS WRIT	B
	PSY	252	SOC PSY	B
	MUS		VOICE	B
	PHIL	360	PHIL OF REL	B
	EDUC	369 2	HIST + PHIL	B
	PSY	252	SOC PSY	B
	GRP	111	AM NEGRO HIST	B
	PSY	252	SOC PSY	B
	MATH	301 2	LINEAR ALG	B
	ART	341	CLASS MED ART	B
	ANTH	301	FK CUL MOD WD	B
	ART	319A	CERAMICS I	B
	PHIL	360	PHIL OF REL	B
	ENG	222 1	INTRO TO FICT	B-
	HIST	202 2	AMER HIST	B-
	SPCH	262	ARGUMENTATION	B-
	ART	319	CERAMICS I	B-
	ENG	320	ST OF LANG	B-
	PS	302	JURISPRUDENCE	B-
	HIST	202 2	AMER HIST	C+
	PS	302	JURISPRUDENCE	C+
	CS	101	INT TO COMP SCI	C+
	ECON	324	MONEY BANKING	C+
	GEOL	101	GEN GEOL I	C+
	PS	302	JURISPRUDENCE	C+
	GRP	111	AM NEGRO HIST	C+
	ECON	303	STATISTICS	C+
	PS	201	AM NATL GOVN	C+
	SPCH	291	THEATRE PART	C+
	PS	341	GRT POL THEO	C
	PHIL	115	INT TO PHIL	C
	PHIL	115	INT TO PHIL	C
	PSY	252	SOC PSY	C
	PHIL	115	INT TO PHIL	C
	ECON	303	STATISTICS	C
	ECON	303	STATISTICS	C
	ECON	303	STATISTICS	C
	SPCH	101	PUB SPEAKING	C
	FR	201	INTER FRENCH	C
	ART	103	FORM AND EXP	C

App. III

NAME	COURSE		DESCRIPT	GRADE
	PS	302	JURISPRUDENCE	C
	PS	201	AM NATL GOVN	C
	PS	342	MOD POL THEO	C
	ECON	202	PRINCIPLES II	C
	ENG	242	MAST LIT II	C
	CHEM	203	ORG CHEM	C
	ECON	303	STATISTICS	C
	ECON	324	MONEY BANKING	C
	SOC	201	INTRO TO SOC	C
	SOC	201	INTRO TO SOC	C
	ENG	221	INTRO TO POETRY	C-
	PSY	203	STAT EXP PROC	C-
	ECON	303	STATISTICS	C-
	PS	216	FR POL SOV UN	C-
	ENG	318	AMER LIT II	C-
	PSY	203	STAT EXP PROC	C-
	PS	216	FR POL SOV UN	C-
	PHYS	113	GEN PHYSICS II	C-
	ECON	315	LABOR ECON	D+
	HIST	372	CIV WAR RECON	D+
	ENG	320	ST OF LANG	D+
	ENG	318	AMER LIT II	D
	ECON	328	THEO ECON GRTH	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	CS	101	INT TO COMP SCI	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	ECON	303	STATISTICS	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	CHEM	103	GEN CHEM	D
	GRP	107	CINEMA SEMINAR	D
	GRP	107	CINEMA SEMINAR	D
	RUSS	103	ELEM RUSS	D-
	PSY	203	STAT EXP PROC	F
	ECON	315	LABOR ECON	F
	ECON	303	STATISTICS	F
	ENG	323	STUD IN AM LIT	F
	ECON	303	STATISTICS	F
	HIST	202 1	AMER HIST	P
	GRP	101	CHINESE	P
	PS	201	AM NATL GOVN	I
	ENG	222 2	INTRO TO FICT	I
	PSY	203	STAT EXP PROC	WX
	EDUC	369 2	HIST + PHIL	WX
	HIST	367	RUSS PRE 1861	WX
	PHIL	115	INT TO PHIL	WX

APPENDIX IV

THE FIRST YEAR PERFORMANCE OF AWR STUDENTS: 1967-68

In the fall of 1967 fifty-one students at Knox College were "admitted with reservations" as to their ability to compete in designated programs as freshmen. At the end of their freshman year twenty-eight of these students had a C average, thirty-six were in good standing, ten were on Unsatisfactory Status, and five had been dropped by the college. These figures closely approximate those achieved by the first AWR experimental group which entered in the fall of 1964. We may conclude, therefore, that the surprising success of the original experiment was not due to a form of "Hawthorne effect" but indicated a genuine changing of odds in favor of these students.

While the performance of the 1967 AWR student must be regarded as satisfactory, the suspicion exists that these students might have done better. In the first place these students were more carefully selected than their 1964 counterparts; their potential seemed greater. Secondly, the three-three system might have been expected to work in favor of these students, if only because academic advisers had fewer chances to make mistakes.

Be this as it may, the advisers of seventeen of the fifty-one AWR students admitted last fall did not follow the ground rules recommended for the advising of these students. The principal reason for this occurrence was that no attempt was made last year to hand pick the advisers of these students. Many advisers, particularly in science, believe that a student who has had three years of mathematics in high school and who shows a reasonable SAT Math score should take calculus; the sooner the better. The kind of competition these students must face, the fact that these students historically have not performed well is ignored by these advisers. Other advisers, on the other hand, long ago fell into the habit of placing students in the Eng 101,

History 104, 100 level foreign language sequence, somehow managing to ignore the general disaster associated with their efforts. One adviser this past year placed all three AWR students assigned to him in such a sequence. Whether by chance or not, none of these students achieved a C average during the year.

Table I categorizes the 1967-68 AWR students by whether or not the adviser followed the ground rules recommended for these students. In the case of the Group I students, the ground rules were followed; in the case of Group II students they were not. The results may be viewed in the following contingency table.

	Number of Students		
Group	C average or better	Less than C average	Totals
I	21	13	34
II	7	10	17
Totals	28	23	51

Is this classification of C average achievement by group meaningful? A chi-square test of the assumption that C average is independent of classification, that deviations of observed frequencies from expected frequencies are random, produced a value of 2.11--less than a 90th percentile value. Our initial assumption therefore cannot be rejected to an acceptable level of significance. The strong probability exists, of course, that such a classification is meaningful; that following the recommended ground rules actually does result in a higher percentage of satisfactory performances. The probability is that the "sample" is simply not large enough to allow us

us to eliminate chance as the explanation of the deviations.[1] Thus while we cannot definitely conclude that the 1967-68 AWR group should have done better the suspicion does exist.

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[1] The above test should not be construed as a test of the validity of the AWR classification itself. The argument is not that no reason existed for the type of advising which occurred in the case of group II students, but that the reasons were insufficient. It is this latter contention which has not been definitely proven.

App. IV

TABLE I

CUMULATIVE INDICES AND CURRENT STATUS OF TWO GROUPS OF AWR STUDENTS ENTERING KNOX COLLEGE, FALL, 1967

Student	AWR I Cumulative Index	Status	Student	AWR II Cumulative Index	Status
	2.11	Good Standing		.50	Dropped
	2.11	Good Standing		1.44	Unsatisfactory
	2.00	Good Standing		1.44	Unsatisfactory
	2.22	Good Standing		1.67	Good Standing
	2.33	Good Standing		2.33	Good Standing
	.67	Dropped		2.17	Good Standing
	1.50	Unsatisfactory		1.78	Good Standing
	2.33	Good Standing		2.67	Good Standing
	.89	Dropped		1.84	Good Standing
	1.56	Unsatisfactory		2.22	Good Standing
	2.00	Good Standing		1.78	Good Standing
	2.11	Good Standing		1.44	Unsatisfactory
	2.56	Good Standing		2.44	Good Standing
	.33	Dropped		1.67	Unsatisfactory
	2.11	Good Standing		2.33	Good Standing
	1.56	Unsatisfactory		1.78	Unsatisfactory
	2.89	Good Standing		2.44	Good Standing
	2.89	Good Standing			
	1.89	Good Standing			
	1.89	Good Standing			
	1.44	Unsatisfactory			
	1.89	Good Standing			
	2.00	Good Standing			
	1.22	Unsatisfactory			
	2.11	Good Standing			
	2.22	Good Standing			
	1.29	Good Standing			
	2.25	Good Standing			
	1.89	Good Standing			
	2.00	Good Standing			
	2.33	Good Standing			
	2.40	Good Standing			
	---	Dropped			
	1.78	Good Standing			

Source: Office of Institutional Research
June, 1968

APPENDIX V

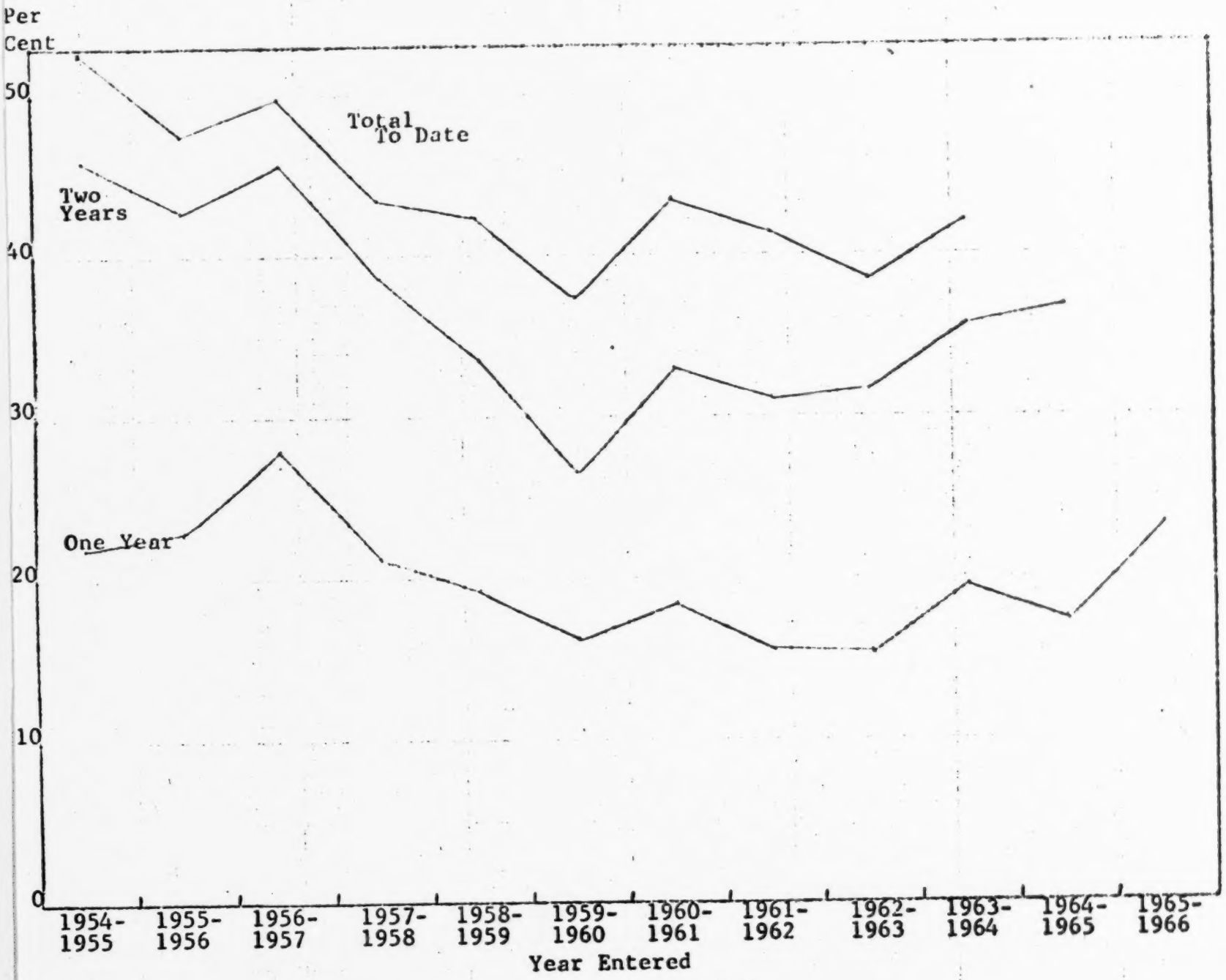
DROP-OUT TABLES AND CHARTS

KNOX COLLEGE

Office of Institutional Research
July, 1967

CHART I

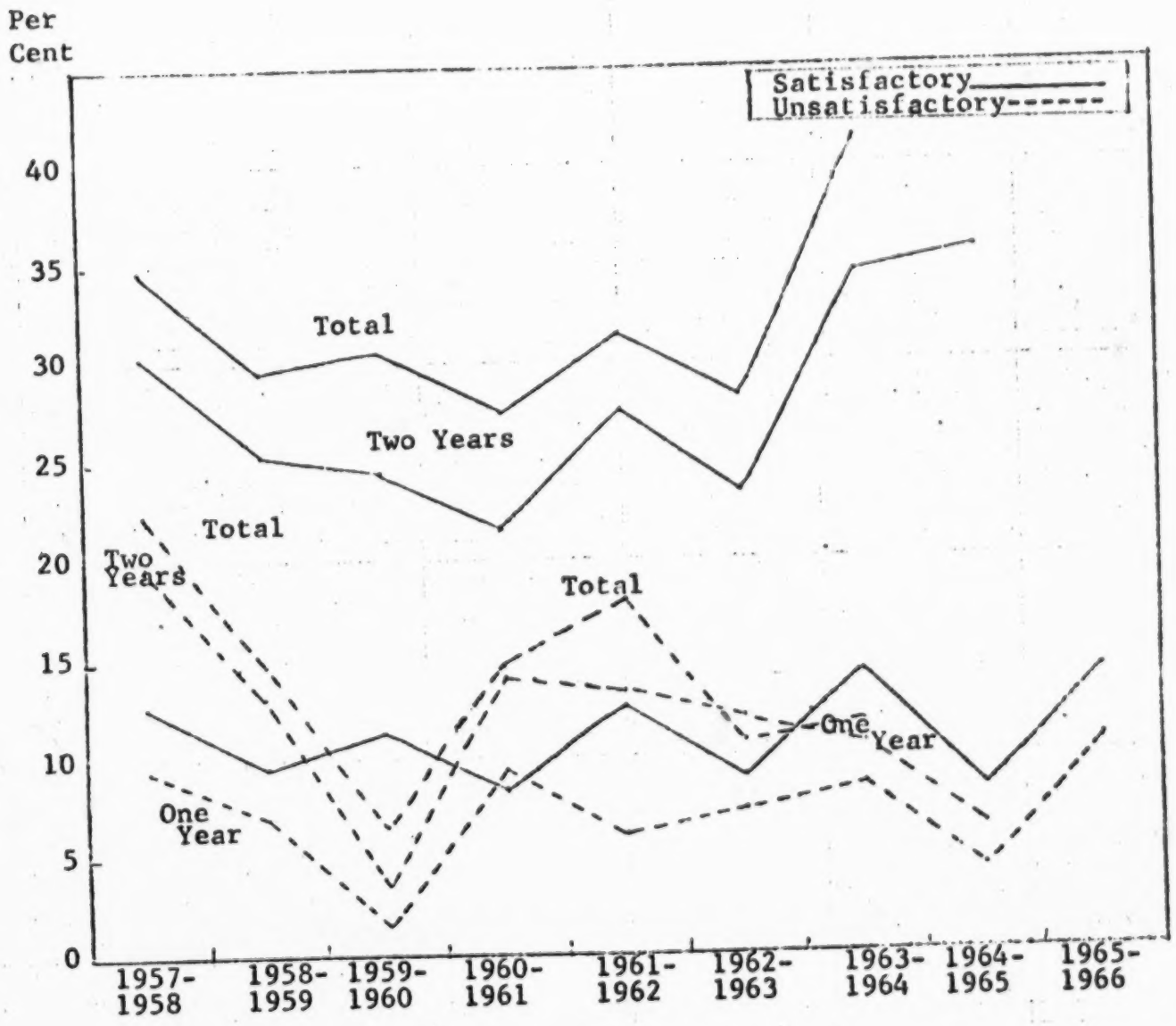
CUMULATIVE PERCENTAGE OF DROP-OUTS FROM ALL CAUSES, CLASSIFIED BY YEARS COMPLETED WHEN DROP-OUT OCCURRED, ALL STUDENTS ENTERING WITH FRESHMAN STATUS, 1954-66



Source: Office of Institutional Research, Knox College
June, 1967

CHART II

CUMULATIVE PERCENTAGE OF DROP-OUTS CLASSIFIED BY SATISFACTORY OR UNSATISFACTORY PROGRESS* WHEN DROP-OUT OCCURRED, WOMEN ENTERING WITH FRESHMAN STATUS, 1957-66

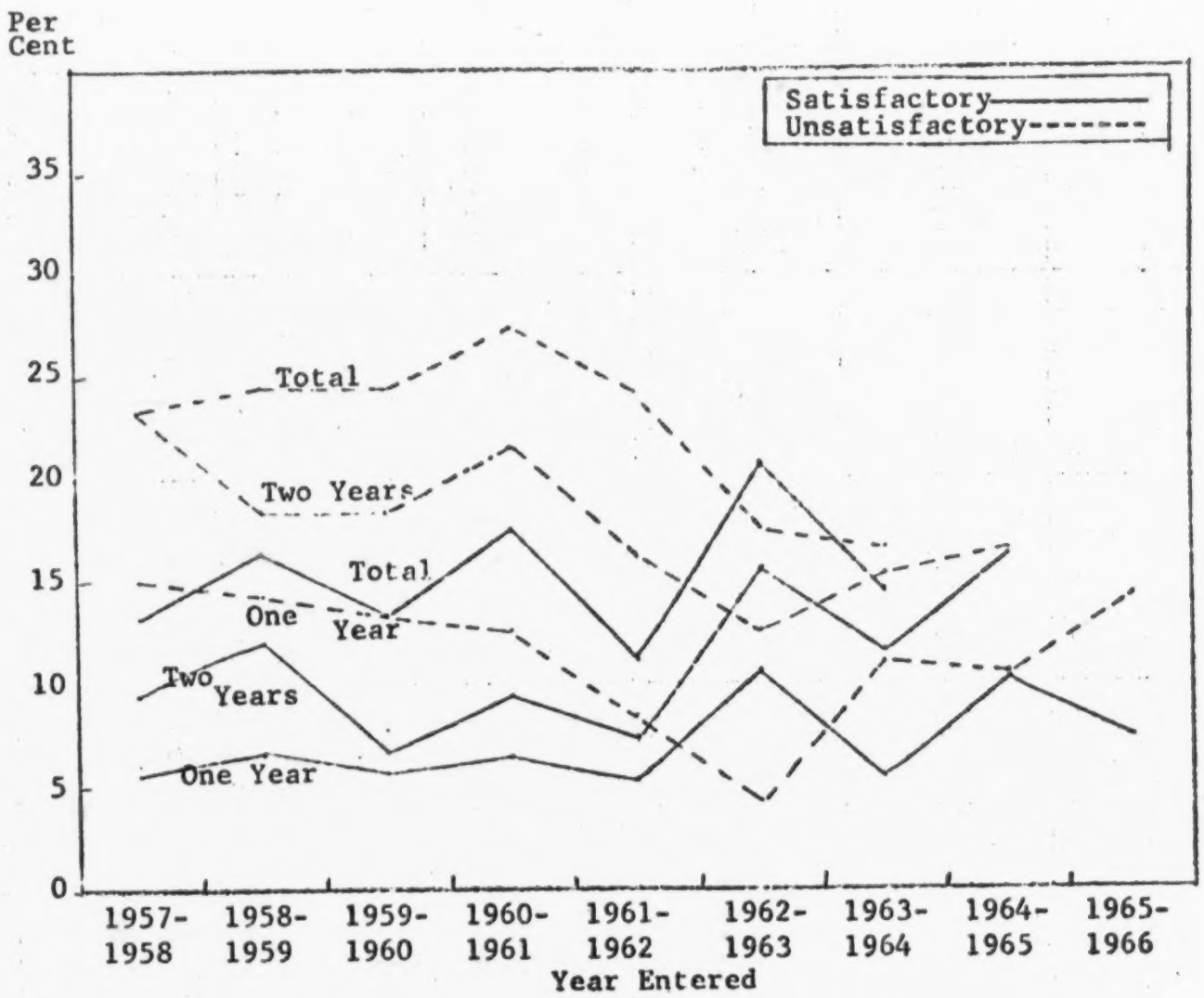


Source: Office of Institutional Research, Knox College
June, 1967

*Satisfactory: 2:00 Grade Index or Above.

CHART III

CUMULATIVE PERCENTAGE OF DROP-OUTS CLASSIFIED BY SATISFACTORY AND UNSATISFACTORY PROGRESS* AND YEARS COMPLETED WHEN DROP-OUT OCCURRED, MEN ENTERING WITH FRESHMAN STATUS 1957-66

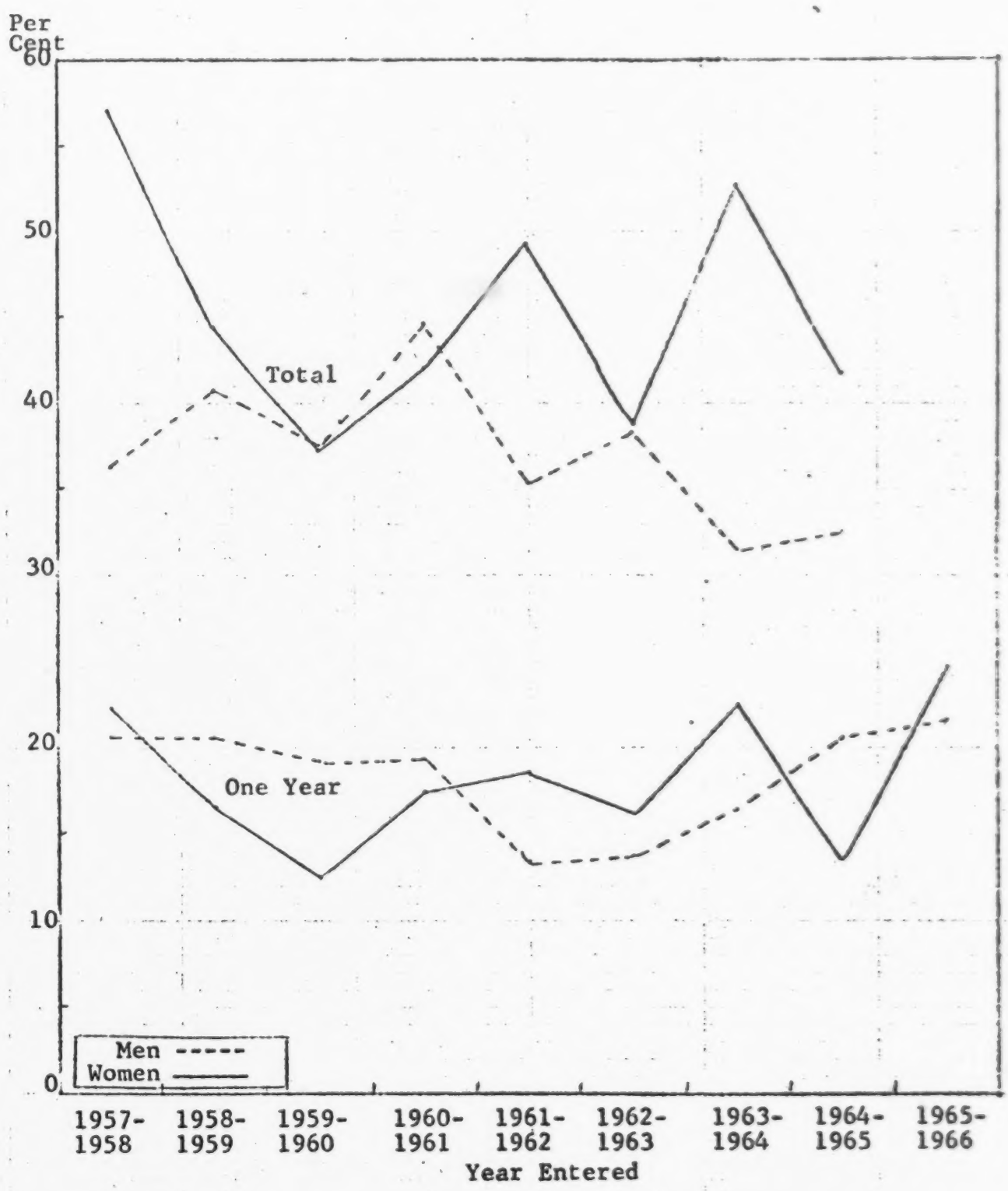


Source: Office of Institutional Research, Knox College
June, 1967

*Satisfactory: 2:00 Grade Index or Above.

CHART IV

FIRST YEAR AND TOTAL PERCENTAGE OF DROP-OUTS
CLASSIFIED BY SEX, 1957-66



Source: Office of Institutional Research, Knox College
June, 1967

TABLE I

CUMULATIVE PERCENTAGE OF COMBINED DROP-OUTS CLASSIFIED BY SEMESTERS COMPLETED WHEN DROP-OUT OCCURRED, ALL STUDENTS ENTERING WITH FRESHMAN STATUS, 1957-66

Semesters Completed Before Drop-Out	1957-1958	1958-1959	1959-1960	1960-1961	1961-1962	1962-1963	1963-1964	1964-1965	1965-1966
1	6.1	4.7	2.6	2.9	3.4	3.4	4.0	3.9	6.1
2	21.1	19.1	16.2	18.4	15.7	15.6	19.6	17.4	23.2
3	26.0	23.1	18.8	23.8	20.1	19.3	21.2	21.8	***
4	38.6	33.4	26.6	33.0	31.1	31.9	35.9	36.9	***
5	40.7	37.1	29.9	35.6	32.9	31.9	39.3	***	***
6	43.5	41.8	35.1	40.0	38.1	35.9	42.0	***	***
7	43.5	41.8	35.1	41.0	38.4	37.7	***	***	***
8	43.5	42.1	36.0	42.9	41.0	38.7	***	***	***
9	43.5	42.1	36.7	43.5	41.0	***	***	***	***
10	43.5	42.1	37.3	43.5	41.3	***	***	***	***

Source: Office of Institutional Research
June, 1967

TABLE II

FRESHMEN, SOPHOMORES AND JUNIORS DROPPED OR WITHDREW AS OF JUNE 15, 1967

Class	Dropped	Withdrew	Total
Freshman	27	15	42
Sophomore	8	19	27
Junior	6	6	12
Total	41	40	81

TABLE III

FRESHMEN, SOPHOMORES AND JUNIORS ON UNSATISFACTORY ACADEMIC STATUS AFTER END OF SCHOOL YEAR, 1966-1967

Class	1966	1967
Freshman	34	41
Sophomore	29	20
Junior	11	14
Total	74	75

Source: Office of Institutional Research
July 7, 1967

APPENDIX VI

SUMMARY OF ADMISSIONS PROFILE FOR THE STUDENTS ADMITTED FOR THE FALL OF 1968

The accompanying Tables I-III provide the high, low, and decile values for the SAT scores for students admitted, students paying deposits by June 22, and students who have either been rejected or who have withdrawn their applications. Table IV provides the corresponding values for high school class ranks for all students admitted.

In regard to SAT scores one would expect the profile of those admitted to be superior to the profile of drops and inferior to those paying deposits.[1] This is the case for the 1968 entering class. In spite of the fact that this entering class will be the largest in the history of the college, its SAT profile compares favorably with that of recent entering classes. The entering profile of men is somewhat higher than in the recent past and the profile of women slightly lower. This may be a reflection of increasing emphasis upon scholarships to men.[2]

George L. Melville
June, 1968

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[1] Students who pay deposits have reviewed scholarship offers which should bias that distribution upward at an institution which is favorably competing with good colleges. For the profile of drops to be superior to admittees would indicate a failure to compete. The superiority of the drop profile to the depositor profile would be a clear indication of the mediocrity of the college.

[2] The attrition rates of good men students is very much less than the corresponding rates for good women students.

TABLE I

HIGH, LOW, AND DECILE VALUES OF SAT SCORES
APPLICANTS ADMITTED, FALL, 1968

	Men		Women	
	Math	Verbal	Math	Verbal
High	800	780	800	800
90	720	680	680	670
80	690	630	650	640
70	660	600	630	620
60	640	580	590	590
50	620	560	570	570
40	590	540	550	560
30	570	520	530	530
20	540	490	510	510
10	500	470	470	470
Low	350	310	390	380

Total Number of Students = 760

Source: Computer Center, June, 1968

TABLE II

HIGH, LOW, AND DECILE VALUES OF SAT SCORES
APPLICANTS WITH DEPOSIT PAID, FALL, 1968

	Men		Women	
	Math	Verbal	Math	Verbal
High	800	760	800	740
90	720	690	680	670
80	690	650	660	640
70	660	600	620	620
60	640	580	590	590
50	620	560	570	580
40	590	540	550	560
30	570	510	530	540
20	540	490	500	510
10	520	470	470	480
Low	350	350	390	380

Total Number of Students = 390.

Source: Computer Center, June, 1968

TABLE III

HIGH, LOW, AND DECILE VALUES OF SAT SCORES
APPLICANTS DROPPED, FALL, 1968

	Men		Women	
	Math	Verbal	Math	Verbal
High	780	750	780	760
90	700	650	680	670
80	660	620	640	640
70	630	580	610	610
60	600	550	580	580
50	560	530	550	560
40	540	500	530	520
30	510	480	500	500
20	480	450	460	460
10	440	420	420	420
Low	350	310	300	290

Total Number of Students = 459

Source: Computer Center, June, 1968

TABLE IV

DISTRIBUTION OF DECILE CLASS RANKS
STUDENTS ADMITTED, FALL, 1968

Decile	Men	Percent	Women	Percent	Total	Percent
1	73	26.3	97	45.5	170	34.6
2	70	25.2	56	26.2	126	25.7
3	48	17.3	27	12.6	75	15.3
4	35	12.6	18	8.4	53	10.8
5	23	8.3	9	4.2	32	6.5
6	13	4.6	1	0.4	14	2.8
7	5	1.8	3	1.4	8	1.6
8	7	2.5	1	0.4	8	1.6
9	3	1.0	1	0.4	4	0.8
10	0	0.0	0	0.0	0	0.0
Unknown	12		13		25	
Totals	289		226		515	

Source: Computer Center, June, 1968

APPENDIX VII

HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
KNOX MAJORS, SEPTEMBER, 1965, TO DATE

Office of Institutional Research
Knox College, June, 1968

APPENDIX VII

TABLE 1
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
ART MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	757	698	738	705
90	748	693	677	664
80	650	656	640	603
70	624	623	577	584
60	613	616	559	573
50	608	611	537	554
40	581	534	527	544
30	554	517	523	531
20	550	484	496	484
10	515	455	474	430
LOW	510	442	316	410

TOTAL NUMBER OF STUDENTS = 55

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 2
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
BIOLOGY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	740	730	753	684
90	687	655	709	670
80	668	631	651	652
70	642	593	626	618
60	627	562	613	612
50	604	541	582	590
40	590	518	571	555
30	561	505	555	525
20	527	479	541	506
10	510	450	491	481
LOW	466	378	473	435

TOTAL NUMBER OF STUDENTS = 93

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 3
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
CHEMISTRY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	774	712	713	727
90	732	664	712	723
80	707	635	694	626
70	694	604	689	619
60	682	591	650	590
50	649	568	643	564
40	632	537	608	553
30	615	528	581	546
20	596	484	581	521
10	536	450	540	492
LOW	462	379	513	475

TOTAL NUMBER OF STUDENTS = 80

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 4
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
CLASSICS MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	0	0	0	0
90	0	0	0	0
80	0	0	0	0
70	0	0	0	0
60	0	0	0	0
50	0	0	0	0
40	0	0	0	0
30	0	0	0	0
20	0	0	0	0
10	0	0	0	0
LOW	0	0	0	0

TOTAL NUMBER OF STUDENTS = 0

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 5
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
COMPUTER SCIENCE MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	0	0	734	642
90	0	0	734	642
80	0	0	734	642
70	0	0	734	642
60	0	0	734	642
50	0	0	734	642
40	0	0	734	642
30	0	0	734	642
20	0	0	734	642
10	0	0	734	642
LOW	0	0	734	642

TOTAL NUMBER OF STUDENTS = 1

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 6
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
ECONOMICS MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	756	721	698	669
90	704	646	696	655
80	689	619	674	649
70	660	597	662	626
60	650	579	653	610
50	635	555	622	605
40	608	538	581	492
30	581	509	545	466
20	550	476	523	466
10	514	450	490	466
LOW	381	339	393	425

TOTAL NUMBER OF STUDENTS = 144

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 7
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
EDUCATION MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	500	531	721	663
90	500	531	648	626
80	500	531	613	594
70	500	531	571	586
60	500	531	562	563
50	500	531	536	547
40	500	531	526	528
30	500	531	505	506
20	500	531	481	494
10	500	531	447	455
LOW	500	531	295	386

TOTAL NUMBER OF STUDENTS = 78

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 8
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
ENGLISH MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	738	743	740	793
90	720	717	696	706
80	696	695	663	678
70	674	658	633	660
60	657	641	598	647
50	624	619	583	631
40	598	591	554	602
30	586	567	518	584
20	541	540	480	559
10	505	527	456	525
LOW	451	501	364	463

TOTAL NUMBER OF STUDENTS = 151

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 9
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
FRENCH MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	676	616	757	690
90	676	616	697	666
80	676	616	662	639
70	676	616	638	612
60	536	613	606	603
50	536	613	572	584
40	536	613	554	557
30	497	515	524	533
20	497	515	492	508
10	497	515	398	479
LOW	497	515	339	444

TOTAL NUMBER OF STUDENTS = 35

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 10
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
GEOLOGY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	747	696	527	610
90	747	696	527	610
80	677	662	527	610
70	662	618	527	610
60	660	582	527	610
50	660	582	527	610
40	644	567	500	440
30	641	566	500	440
20	530	547	500	440
10	490	350	500	440
LOW	490	350	500	440

TOTAL NUMBER OF STUDENTS = 10

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 11
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
GERMAN MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	680	640	707	773
90	680	640	694	714
80	680	640	685	691
70	680	640	654	683
60	680	640	626	655
50	680	640	606	646
40	654	530	598	618
30	654	530	543	611
20	654	530	506	529
10	654	530	480	479
LOW	654	530	480	479

TOTAL NUMBER OF STUDENTS = 12

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 12
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
HISTORY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	757	769	774	721
90	712	691	686	658
80	674	667	642	648
70	644	638	613	628
60	627	603	588	610
50	607	577	548	586
40	595	553	527	566
30	555	534	510	544
20	518	504	464	509
10	482	464	433	483
LOW	348	319	341	467

TOTAL NUMBER OF STUDENTS = 134

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 13
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
LATIN MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	0	0	559	743
90	0	0	559	743
80	0	0	559	743
70	0	0	559	743
60	0	0	515	605
50	0	0	515	605
40	0	0	515	605
30	0	0	497	541
20	0	0	497	541
10	0	0	497	541
LOW	0	0	497	541

TOTAL NUMBER OF STUDENTS = 3

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLF 14
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
MATHEMATICS MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	787	795	757	747
90	774	662	737	695
80	749	640	712	669
70	737	620	703	662
60	730	573	700	626
50	712	564	698	587
40	699	538	686	566
30	667	524	667	546
20	617	498	650	533
10	604	451	604	489
LOW	496	309	510	392

TOTAL NUMBER OF STUDENTS = 91

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 15
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
MODERN LANGUAGE MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	721	650	722	773
90	721	650	694	678
80	632	629	680	644
70	632	629	662	606
60	571	579	644	605
50	571	579	613	599
40	520	566	571	590
30	520	566	556	571
20	497	484	536	531
10	497	484	482	488
LOW	497	484	429	456

TOTAL NUMBER OF STUDENTS = 39

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 16
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
MUSIC MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	672	654	716	704
90	672	654	685	631
80	672	654	626	616
70	672	654	615	598
60	624	653	606	563
50	624	653	590	544
40	624	653	550	531
30	489	566	523	516
20	489	566	486	497
10	489	566	482	443
LOW	489	566	473	399

TOTAL NUMBER OF STUDENTS = 18

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 17
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
PHILOSOPHY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	774	703	514	695
90	765	691	514	695
80	735	666	514	695
70	726	662	514	695
60	724	631	514	695
50	712	598	514	695
40	685	549	481	523
30	635	536	481	523
20	596	509	481	523
10	568	496	481	523
LOW	553	479	481	523

TOTAL NUMBER OF STUDENTS = 17

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 18
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
PHYSICS MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	791	729	788	731
90	767	701	788	731
80	753	677	774	690
70	734	656	774	690
60	721	654	718	688
50	707	649	718	688
40	686	628	707	590
30	671	592	707	590
20	622	522	690	581
10	586	509	690	581
LOW	577	464	690	581

TOTAL NUMBER OF STUDENTS = 33

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 19
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
POLITICAL SCIENCE MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	778	740	721	697
90	707	677	703	679
80	671	660	671	677
70	648	643	640	657
60	626	611	631	636
50	617	598	615	618
40	599	579	596	609
30	582	547	566	574
20	562	515	562	541
10	518	468	533	484
LOW	415	398	506	464

TOTAL NUMBER OF STUDENTS = 128

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 20
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
PSYCHOLOGY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	748	701	744	695
90	740	670	712	688
80	730	624	694	654
70	676	609	648	650
60	651	599	613	605
50	624	579	604	605
40	622	563	518	561
30	580	546	514	555
20	554	502	473	507
10	530	470	456	477
LOW	432	432	442	440

TOTAL NUMBER OF STUDENTS = 44

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 21
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
RUSSIAN MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	685	523	703	670
90	685	523	703	670
80	685	523	703	670
70	685	523	703	670
60	685	523	689	571
50	685	523	689	571
40	685	523	689	571
30	685	523	659	514
20	685	523	659	514
10	685	523	659	514
LOW	685	523	659	514

TOTAL NUMBER OF STUDENTS = 4

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 22
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
RUSSIAN AREA STUDIES MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	699	684	566	685
90	699	684	566	685
80	699	684	566	685
70	699	684	566	685
60	687	619	514	555
50	687	619	514	555
40	687	619	514	555
30	509	497	433	496
20	509	497	433	496
10	509	497	433	496
LOW	509	497	433	496

TOTAL NUMBER OF STUDENTS = 6

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 23
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
SOCIOLOGY MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	774	705	721	758
90	708	669	687	668
80	667	631	650	626
70	651	598	635	605
60	615	564	615	590
50	590	561	562	577
40	565	540	545	549
30	547	531	530	533
20	514	489	480	507
10	478	447	462	466
LOW	434	384	375	353

TOTAL NUMBER OF STUDENTS = 102

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 24
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
SPANISH MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	489	556	735	662
90	489	556	694	657
80	489	556	642	606
70	489	556	606	605
60	489	556	528	554
50	489	556	523	542
40	460	489	505	516
30	460	489	491	507
20	460	489	490	483
10	460	489	464	475
LOW	460	489	415	463

TOTAL NUMBER OF STUDENTS = 21

SOURCE - COMPUTER CENTER, JUNE, 1968

TABLE 25
HIGH, LOW, AND DECILE VALUES OF SAT SCORES,
SPEECH MAJORS, SEPTEMBER, 1965, TO DATE

	MEN		WOMEN	
	MATH	VERBAL	MATH	VERBAL
HIGH	755	740	622	731
90	686	651	617	698
80	640	638	606	662
70	624	624	598	655
60	615	603	574	632
50	598	560	568	612
40	586	525	531	610
30	554	514	505	587
20	536	482	491	483
10	491	451	472	457
LOW	433	410	406	447

TOTAL NUMBER OF STUDENTS = 34

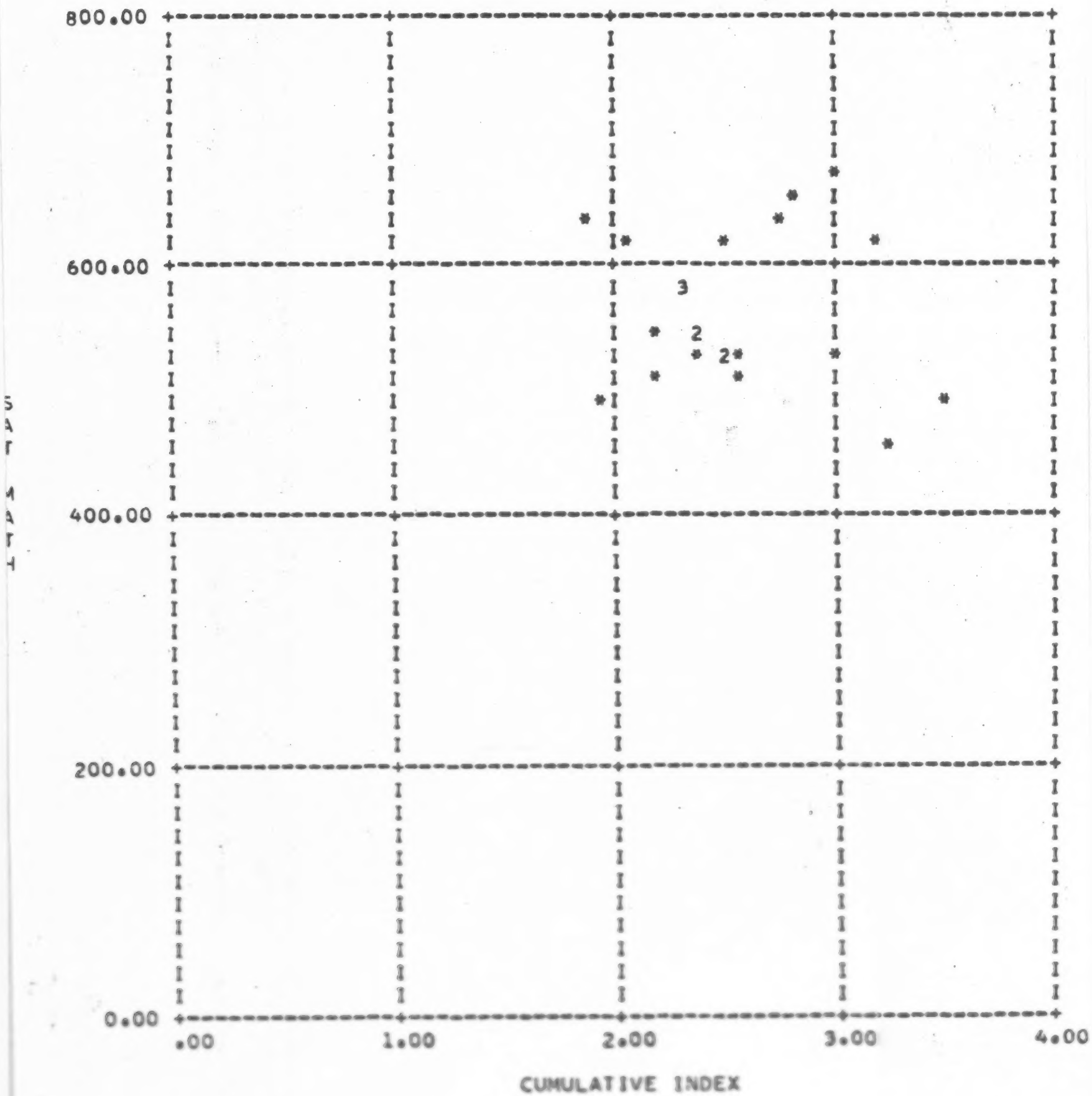
SOURCE - COMPUTER CENTER, JUNE, 1968

APPENDIX VIII

SCATTER DIAGRAMS RELATING ENTERING PROFILE TO CUMULATIVE INDEX,
SELECTED MAJORS, KNOX GRADUATES, SEPTEMBER, 1965 TO DATE

Office of Institutional Research
Knox College, June, 1968

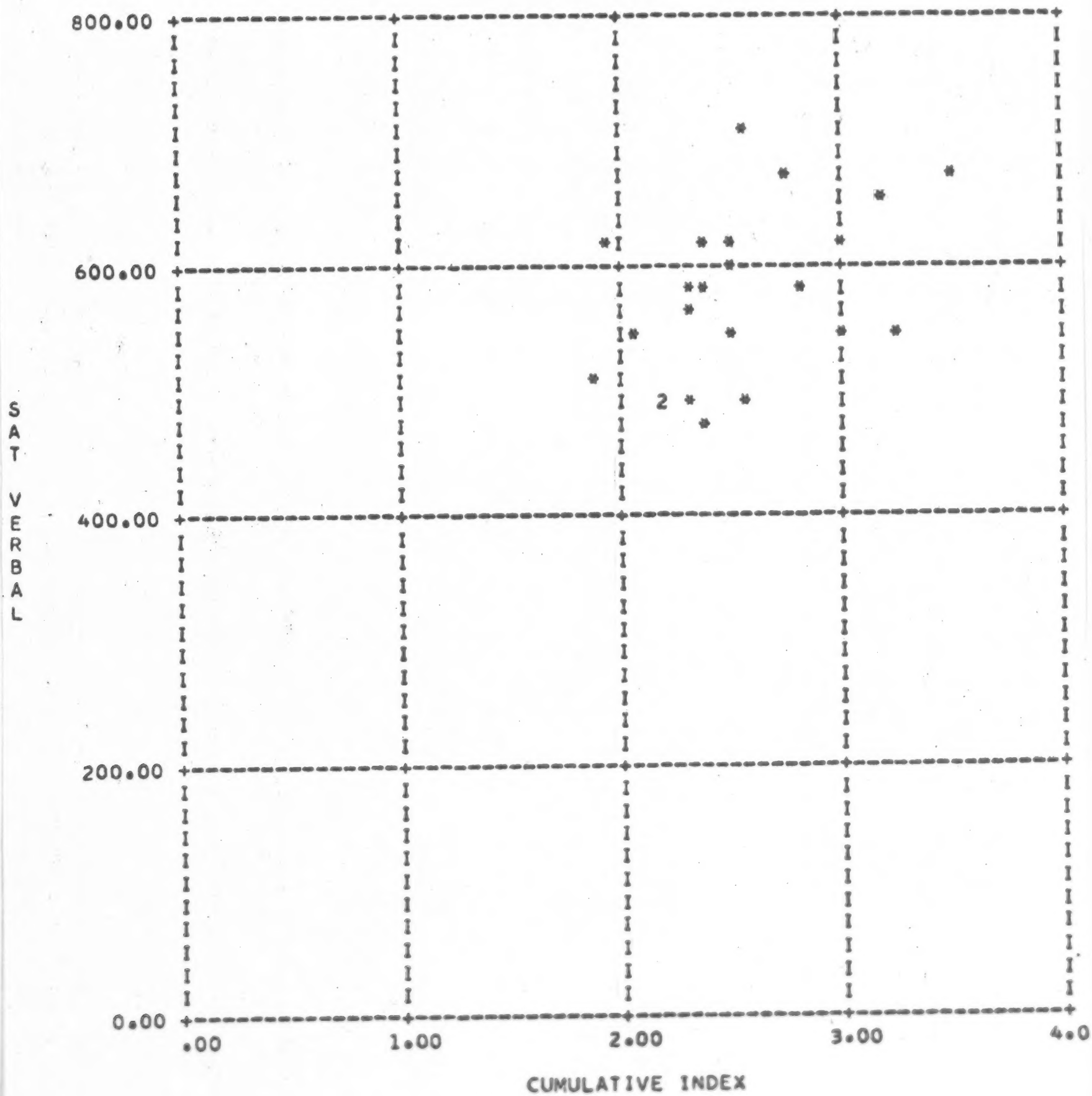
CHART I
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ART,
SEPTEMBER, 1965, TO DATE



* 23 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

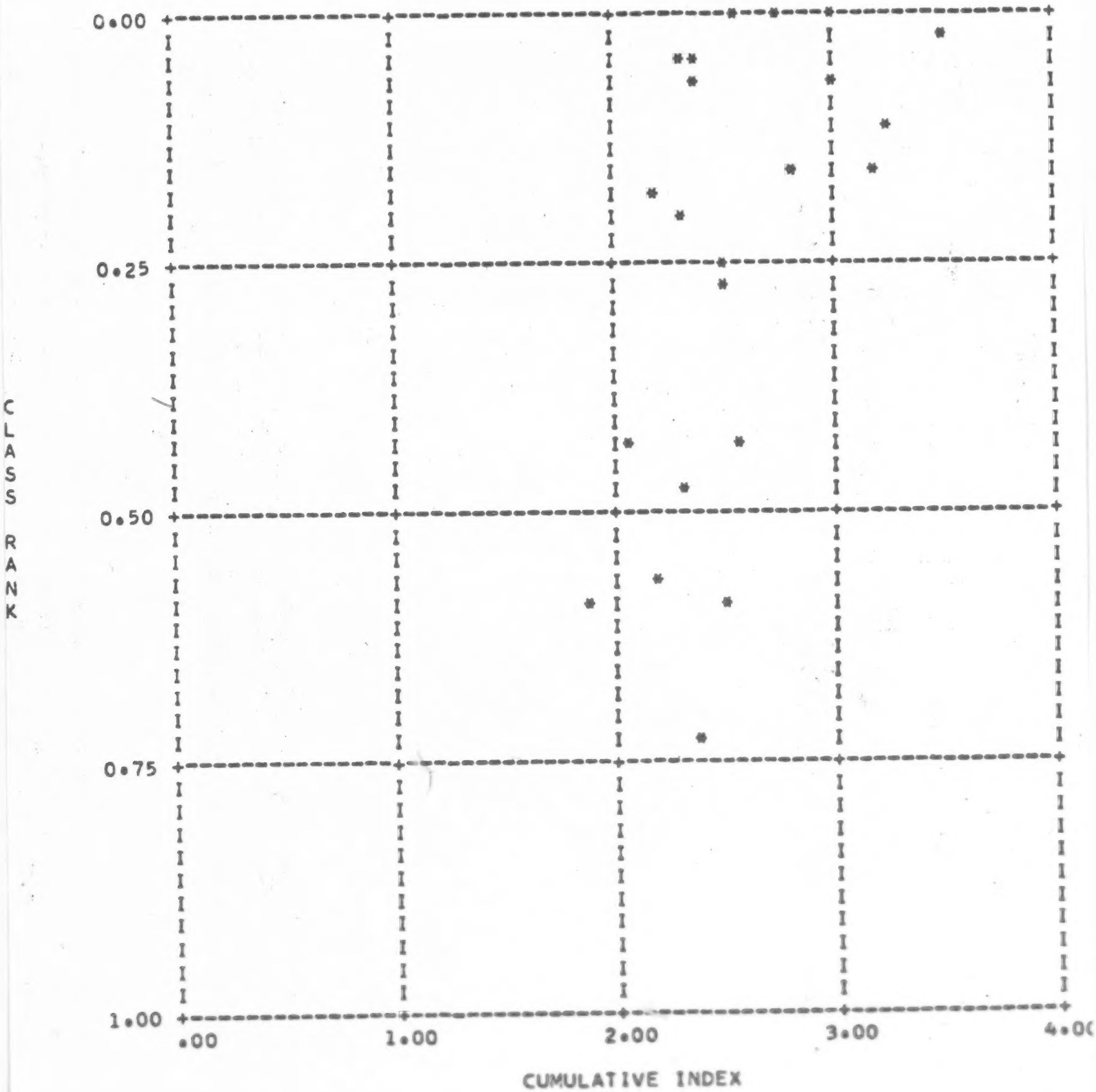
CHART II
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ART,
SEPTEMBER, 1965, TO DATE



* 23 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

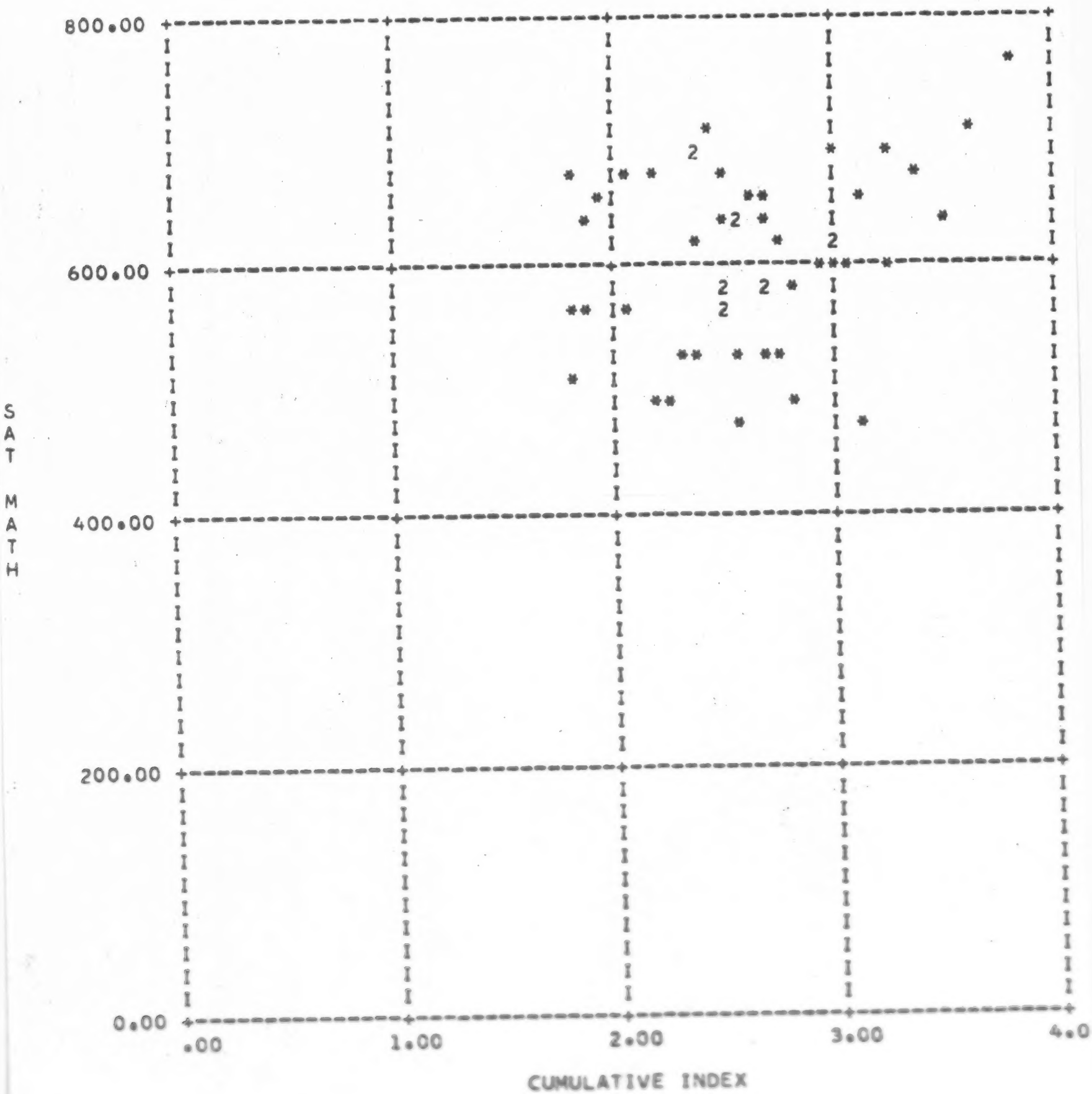
CHART III
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ART,
SEPTEMBER, 1965, TO DATE



* 22 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

CHART IV
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN BIOLOGY,
SEPTEMBER, 1965, TO DATE

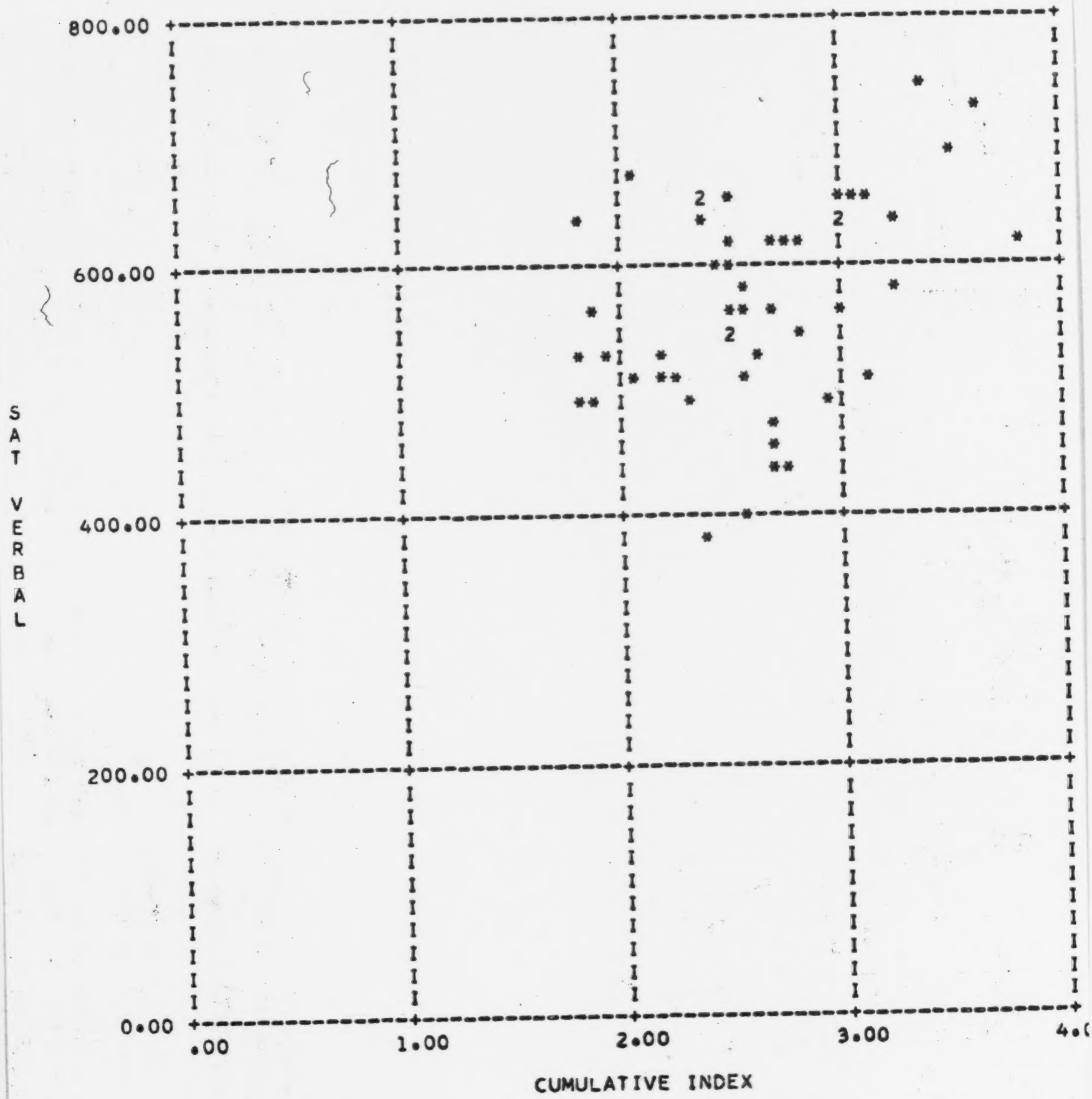


* 51 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

CHART V

SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES, MAJORING IN BIOLOGY,
SEPTEMBER, 1965, TO DATE

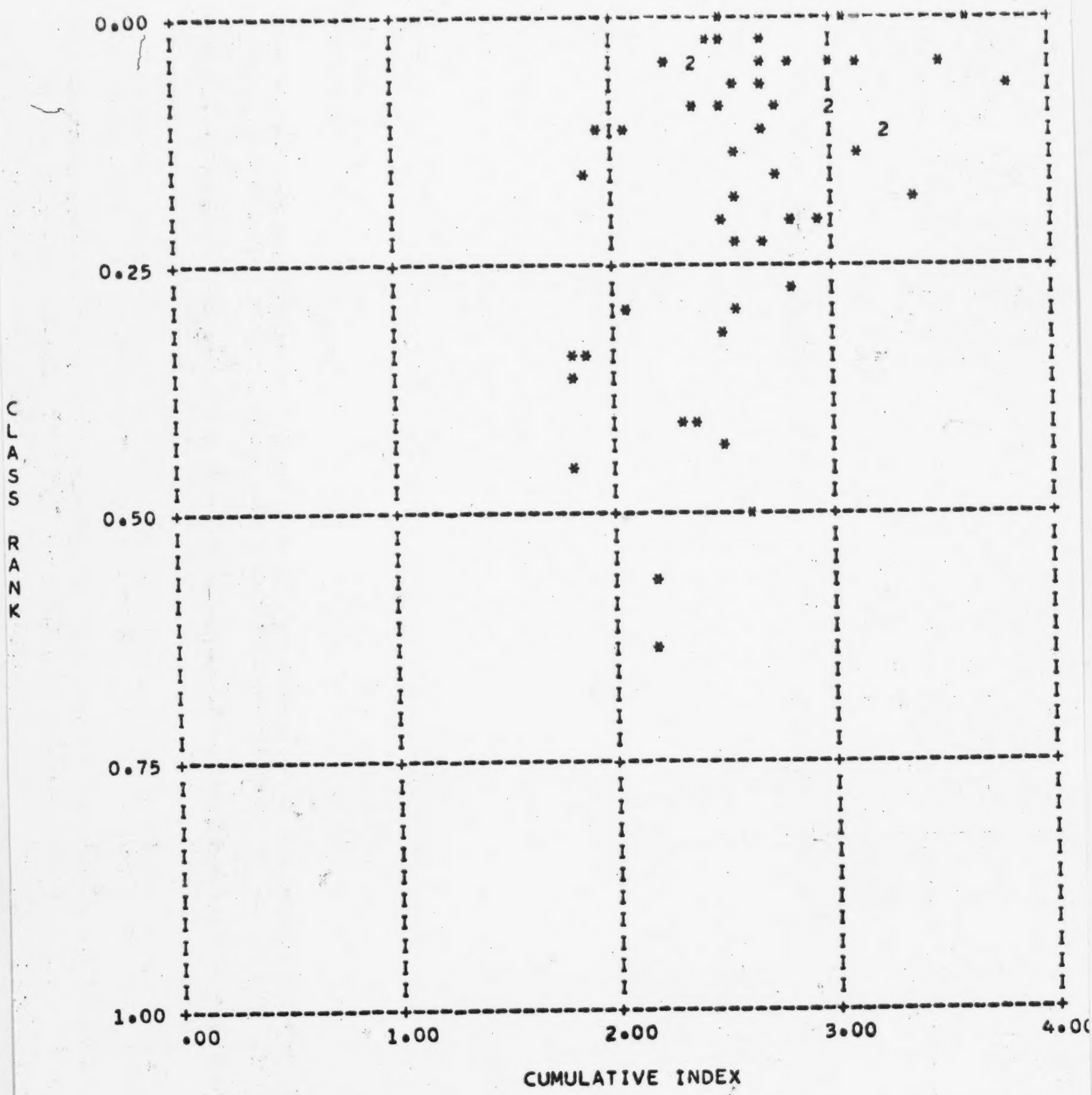


* 51 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

CHART VI

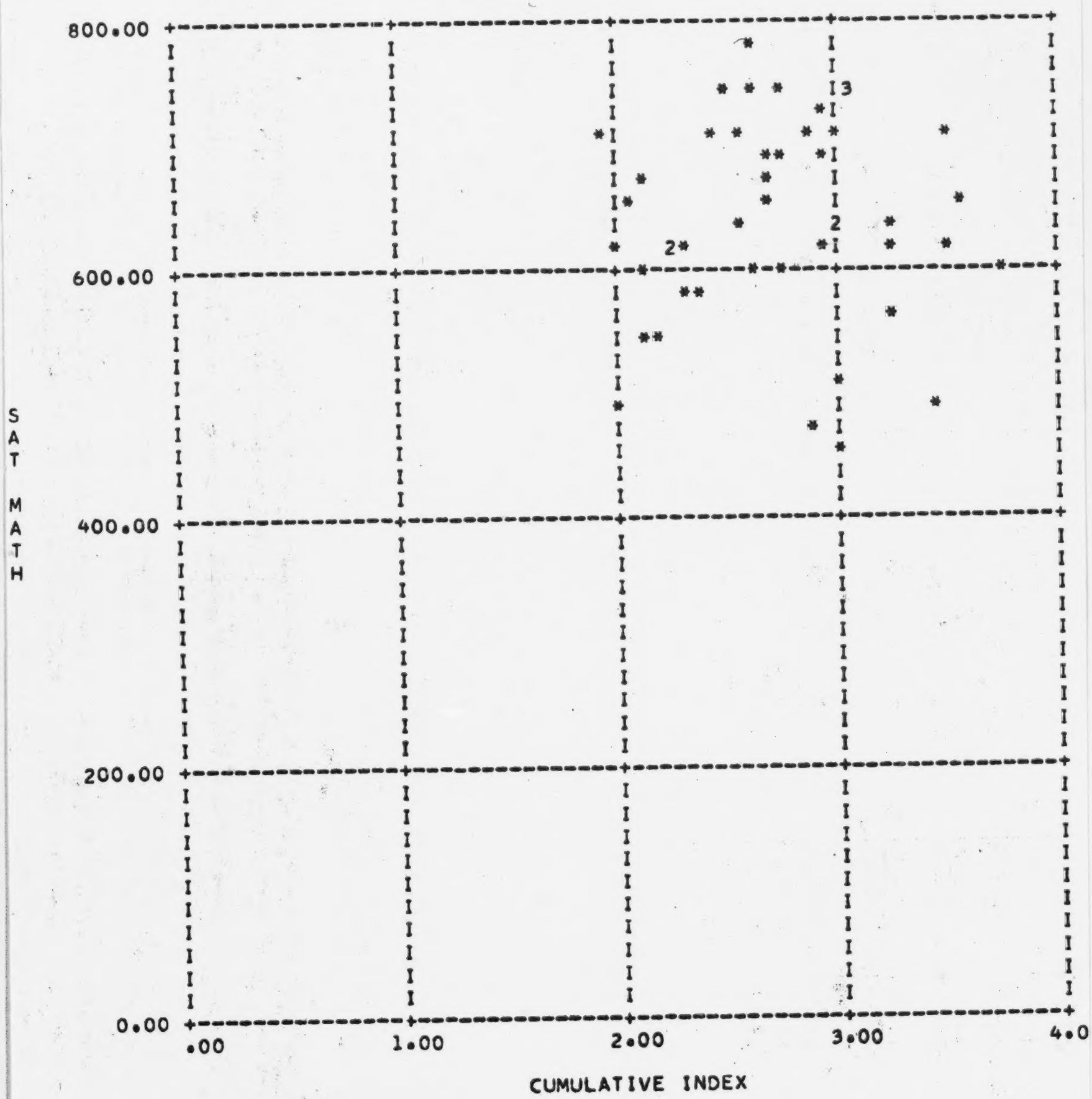
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES.
KNOX COLLEGE GRADUATES* MAJORING IN BIOLOGY.
SEPTEMBER. 1963. TO DATE



* 52 STUDENTS

SOURCE - COMPUTER CENTER. JUNE. 1968

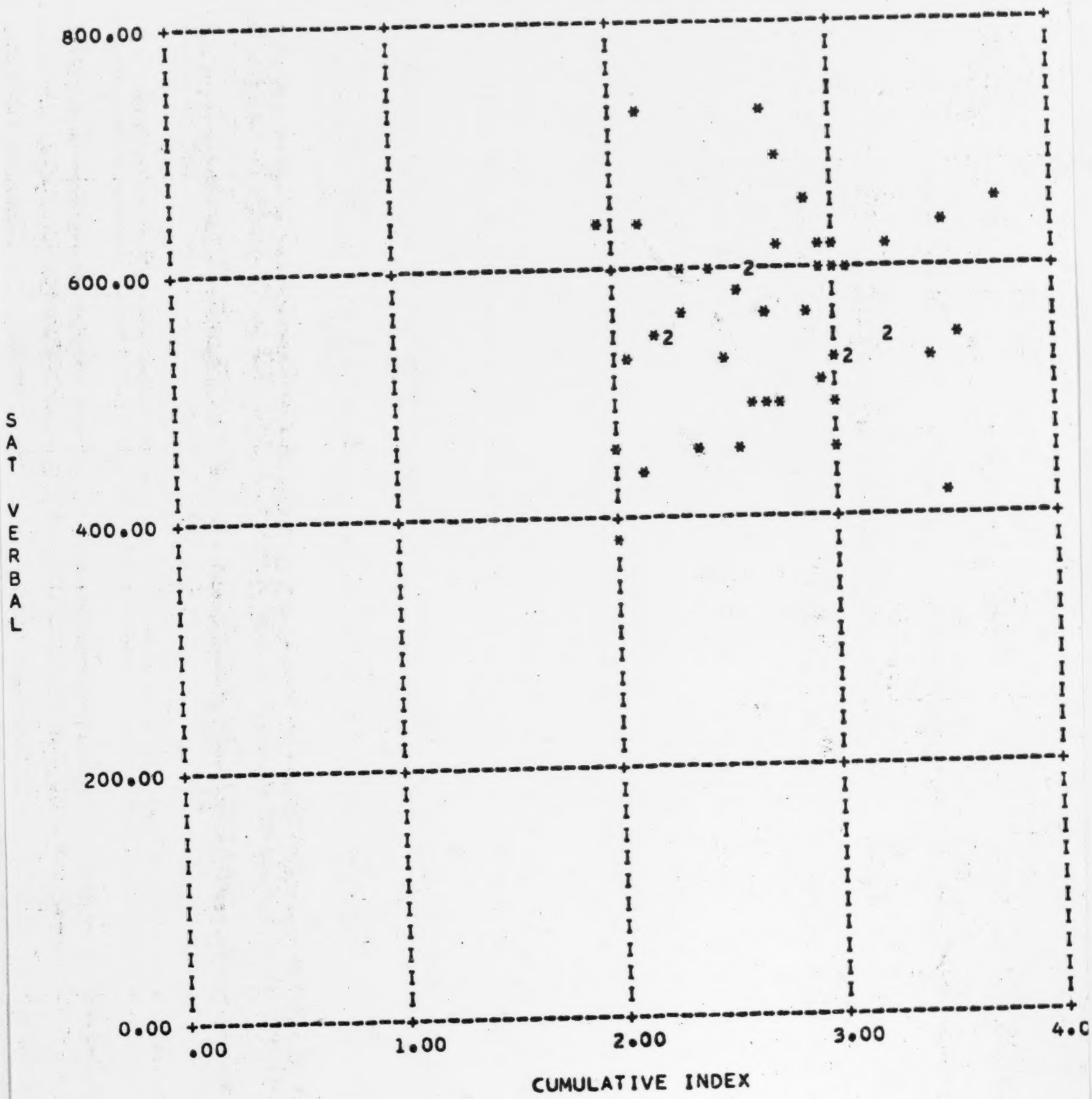
CHART VII
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES*
KNOX COLLEGE GRADUATES* MAJORING IN CHEMISTRY*
SEPTEMBER* 1965* TO DATE



* 47 STUDENTS

SOURCE - COMPUTER CENTER* JUNE* 1968

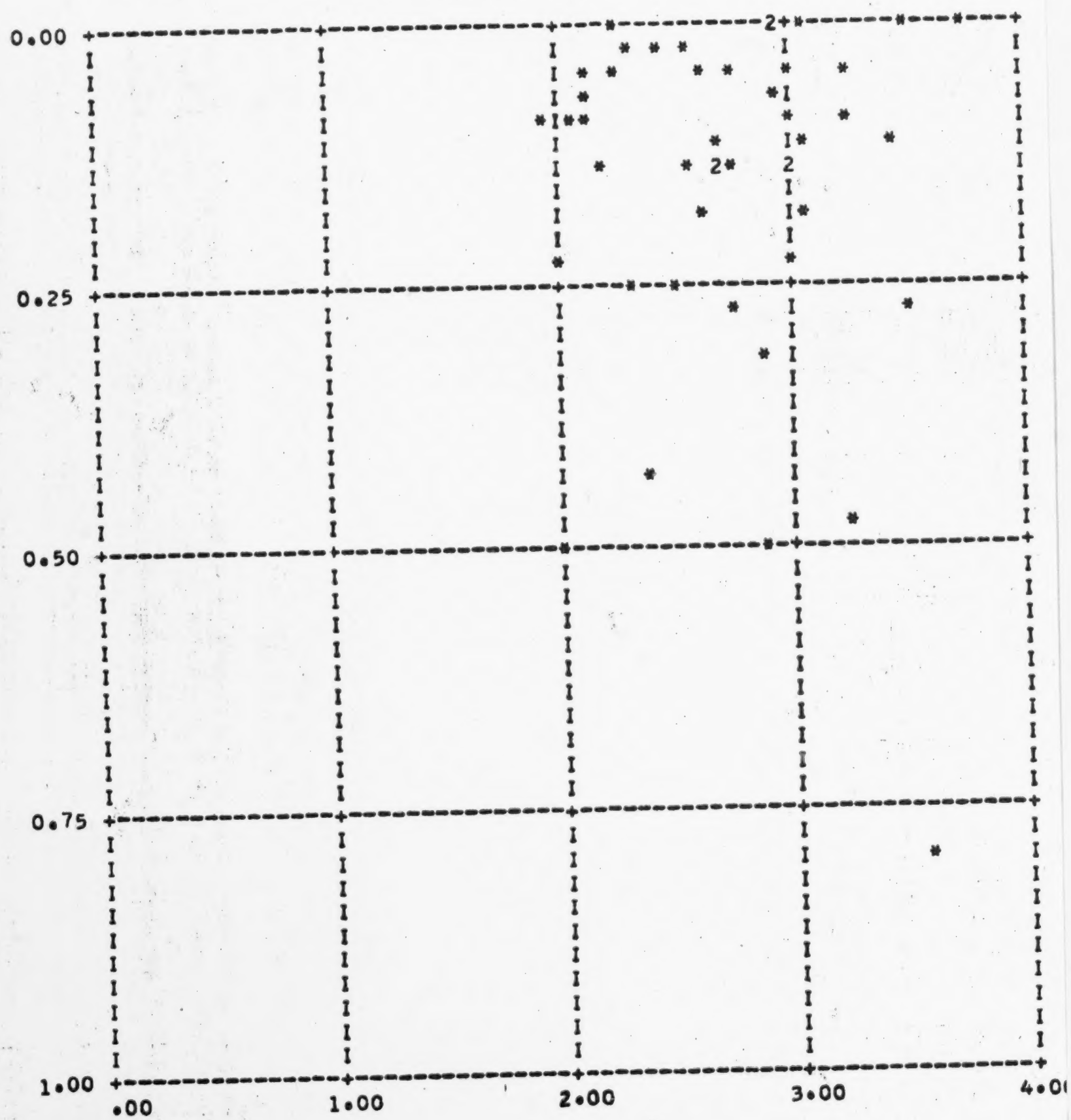
CHART VIII
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN CHEMISTRY,
SEPTEMBER, 1965, TO DATE



* 47 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

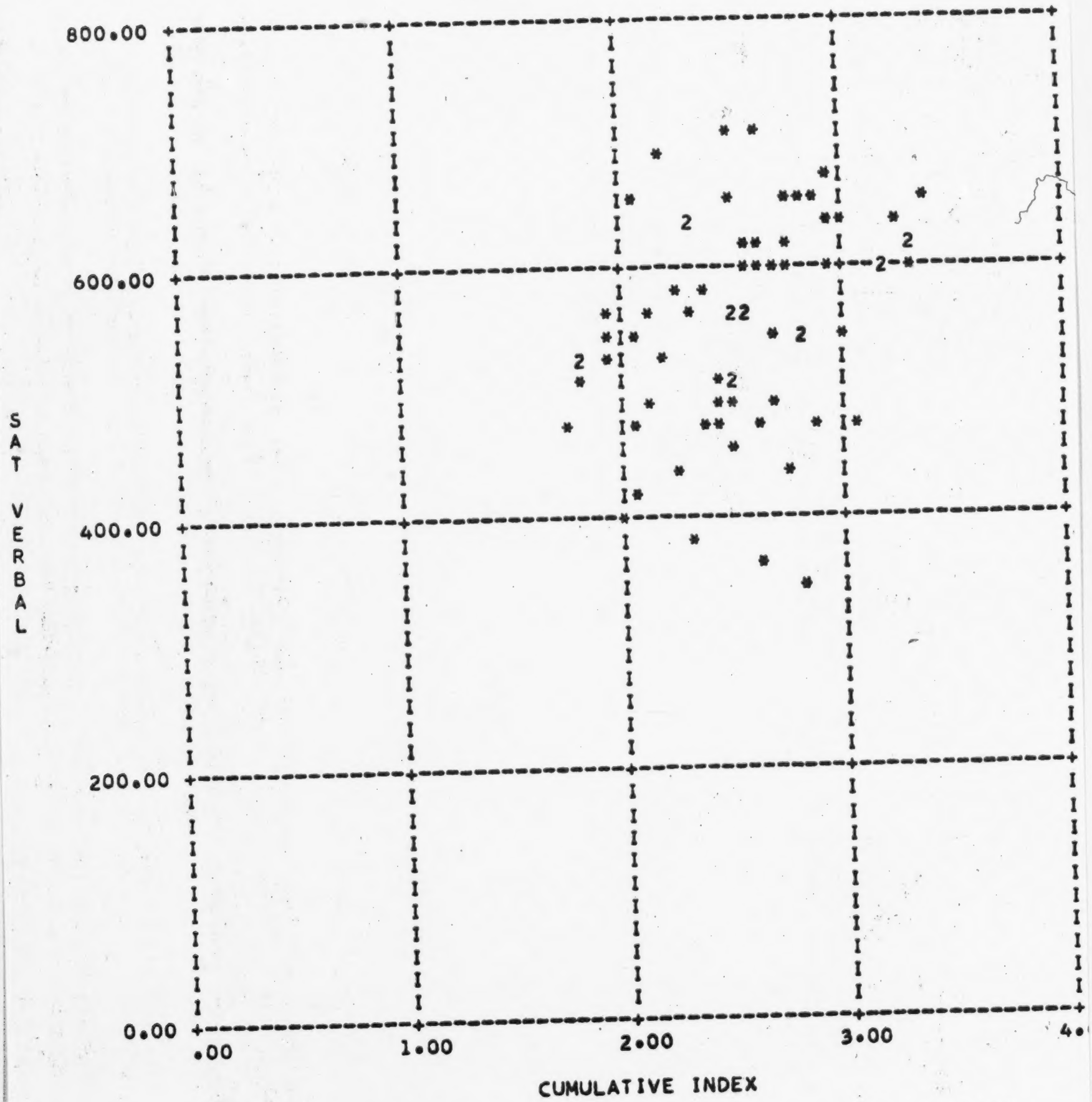
CHART IX
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN CHEMISTRY,
SEPTEMBER, 1965, TO DATE



* 47 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

CHART XVII
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES.
KNOX COLLEGE GRADUATES* MAJORING IN ECONOMICS.
SEPTEMBER. 1965. TO DATE

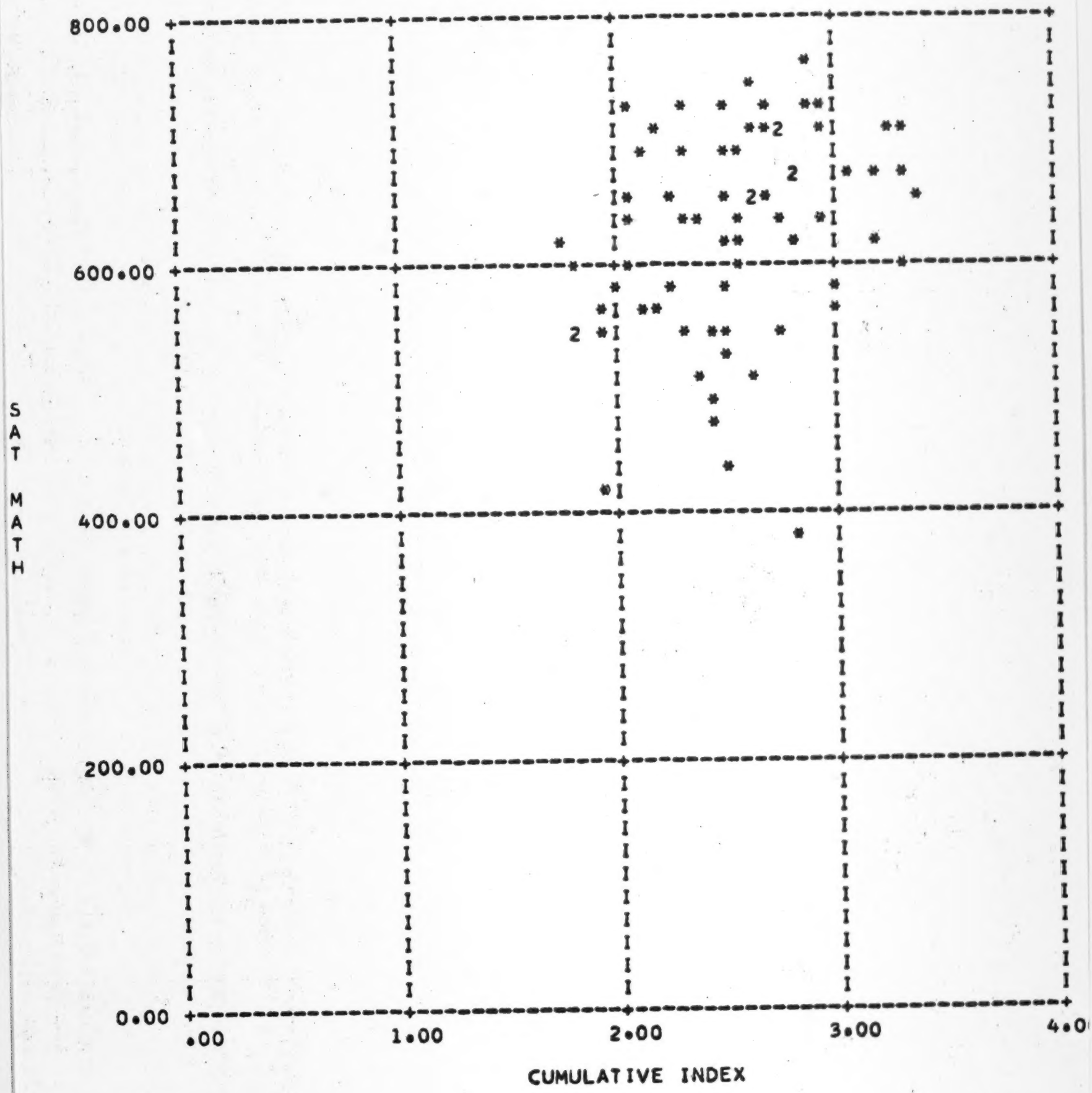


* 70 STUDENTS

SOURCE - COMPUTER CENTER. JUNE. 1968

CHART XVI

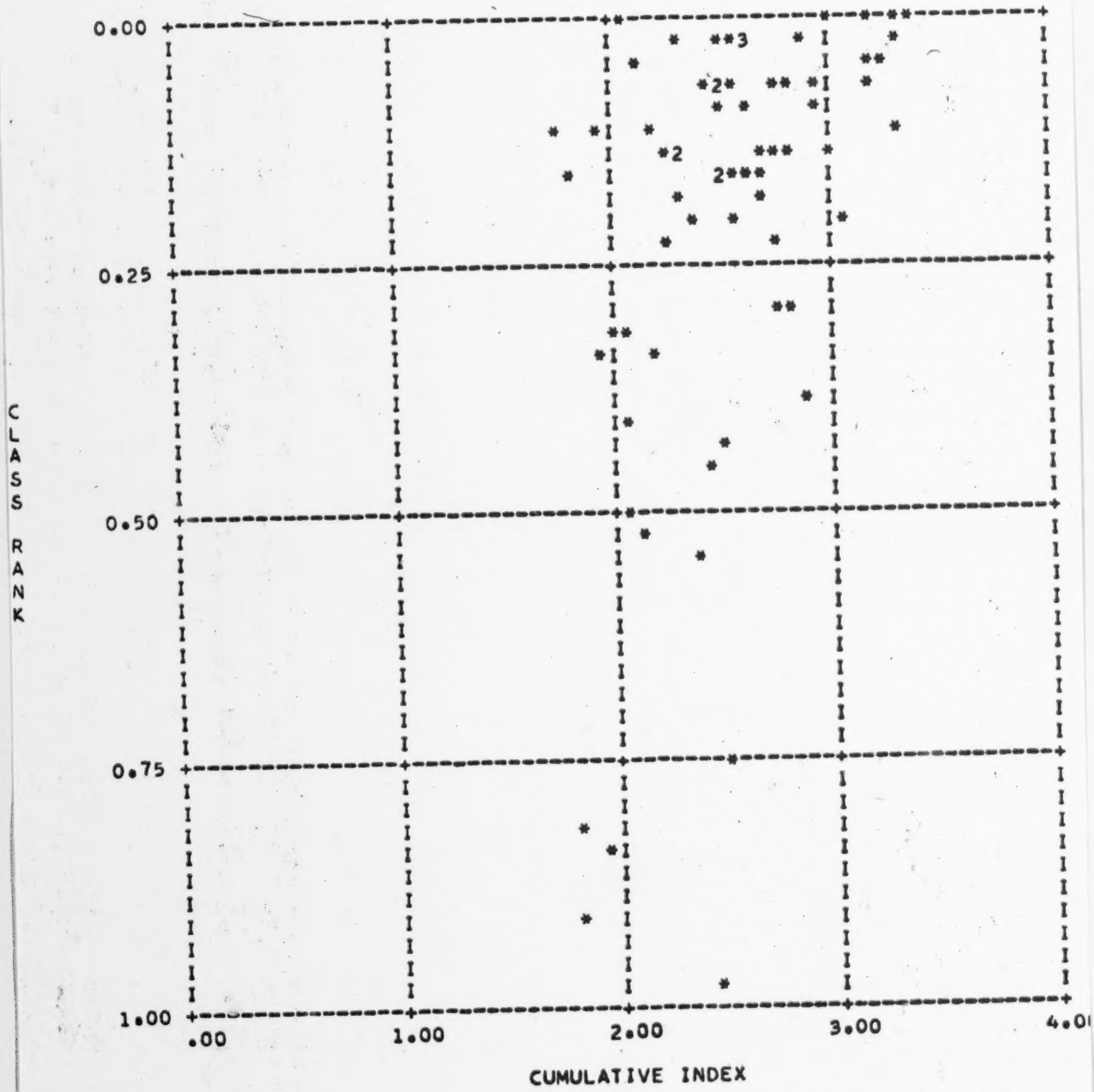
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES*
KNOX COLLEGE GRADUATES* MAJORING IN ECONOMICS*
SEPTEMBER* 1965* TO DATE



* 70 STUDENTS

SOURCE - COMPUTER CENTER* JUNE* 1968

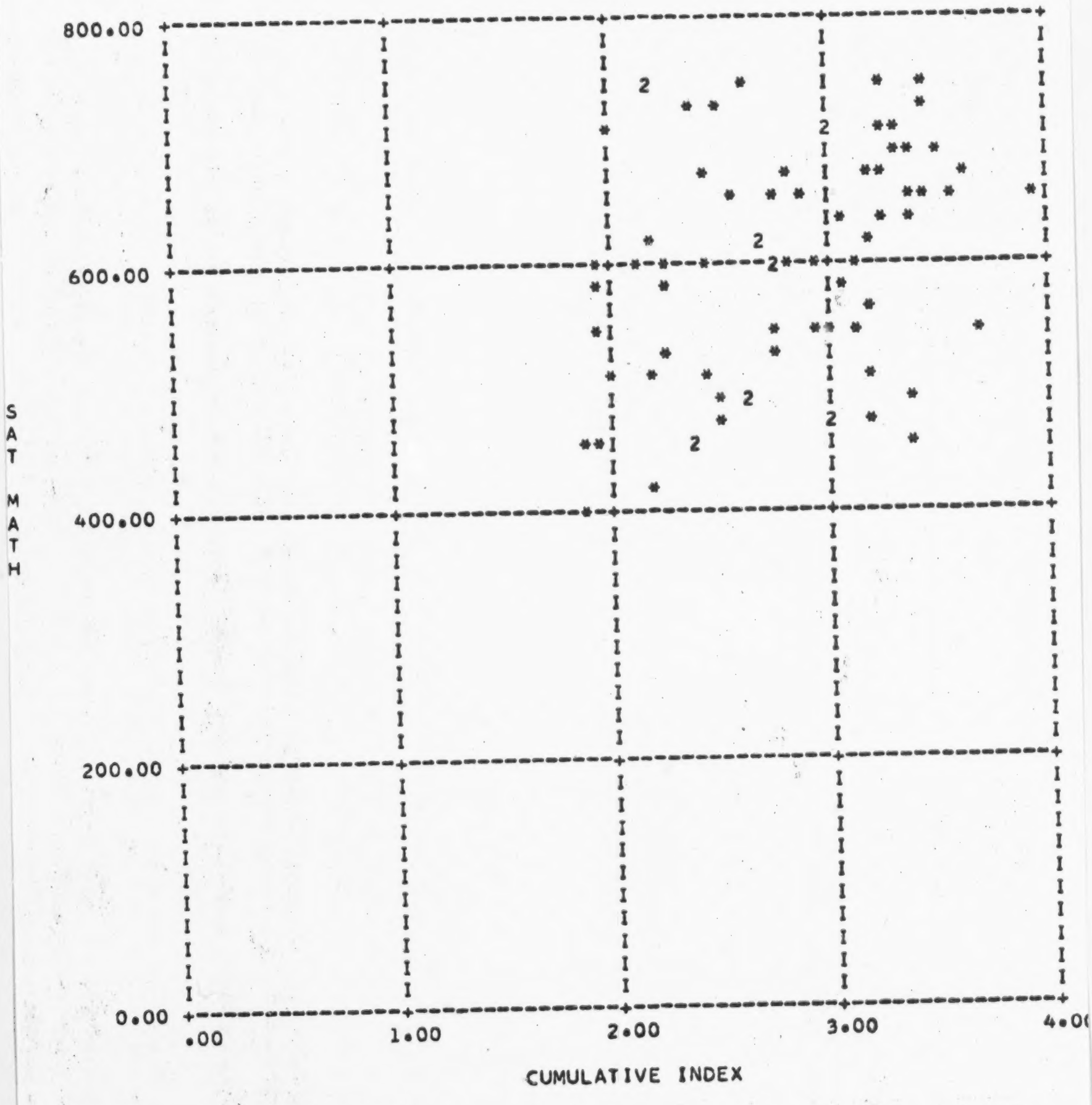
CHART XVIII
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ECONOMICS,
SEPTEMBER, 1965, TO DATE



* 69 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

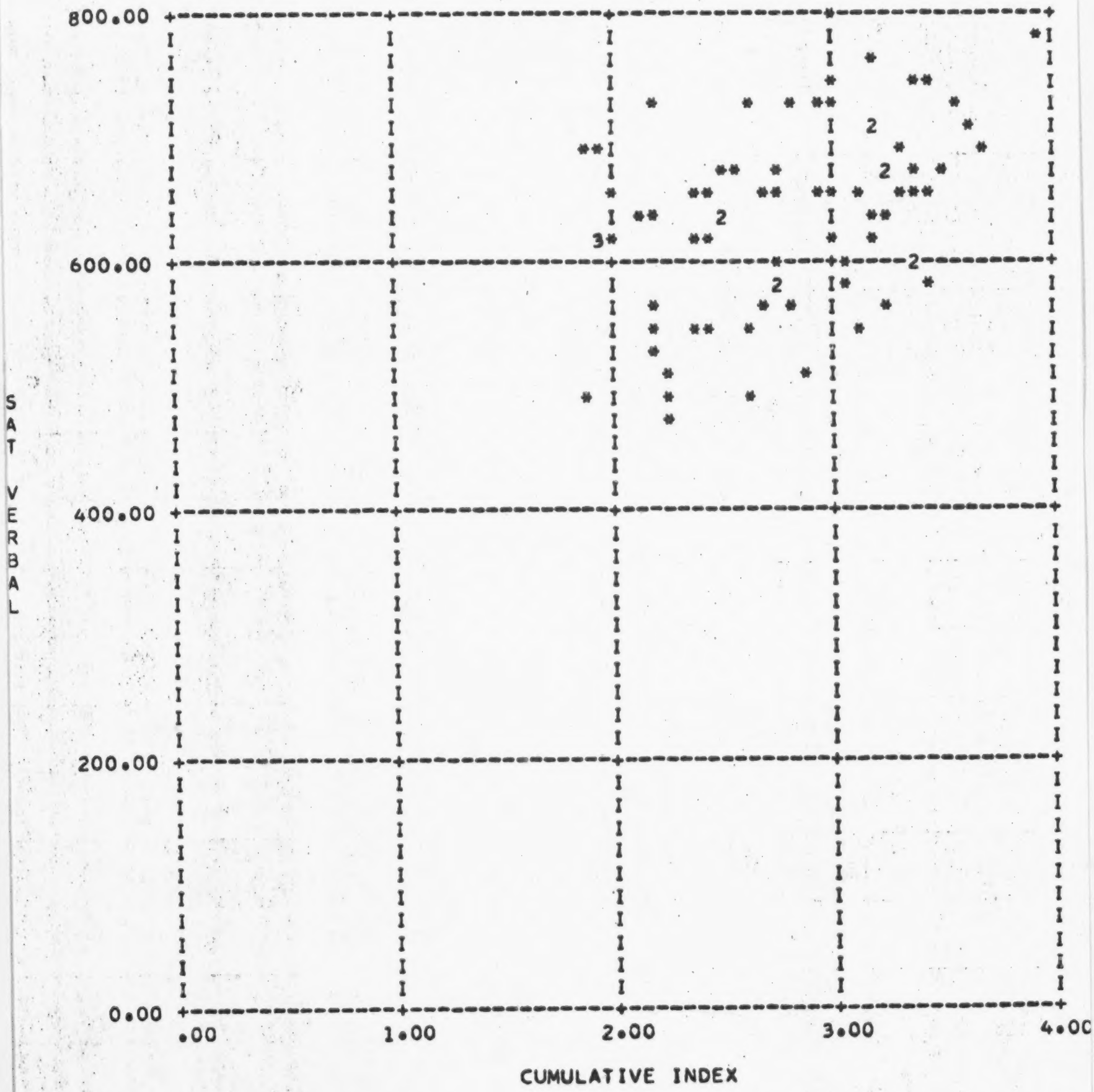
CHART XXII
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ENGLISH,
SEPTEMBER, 1965, TO DATE



* 75 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

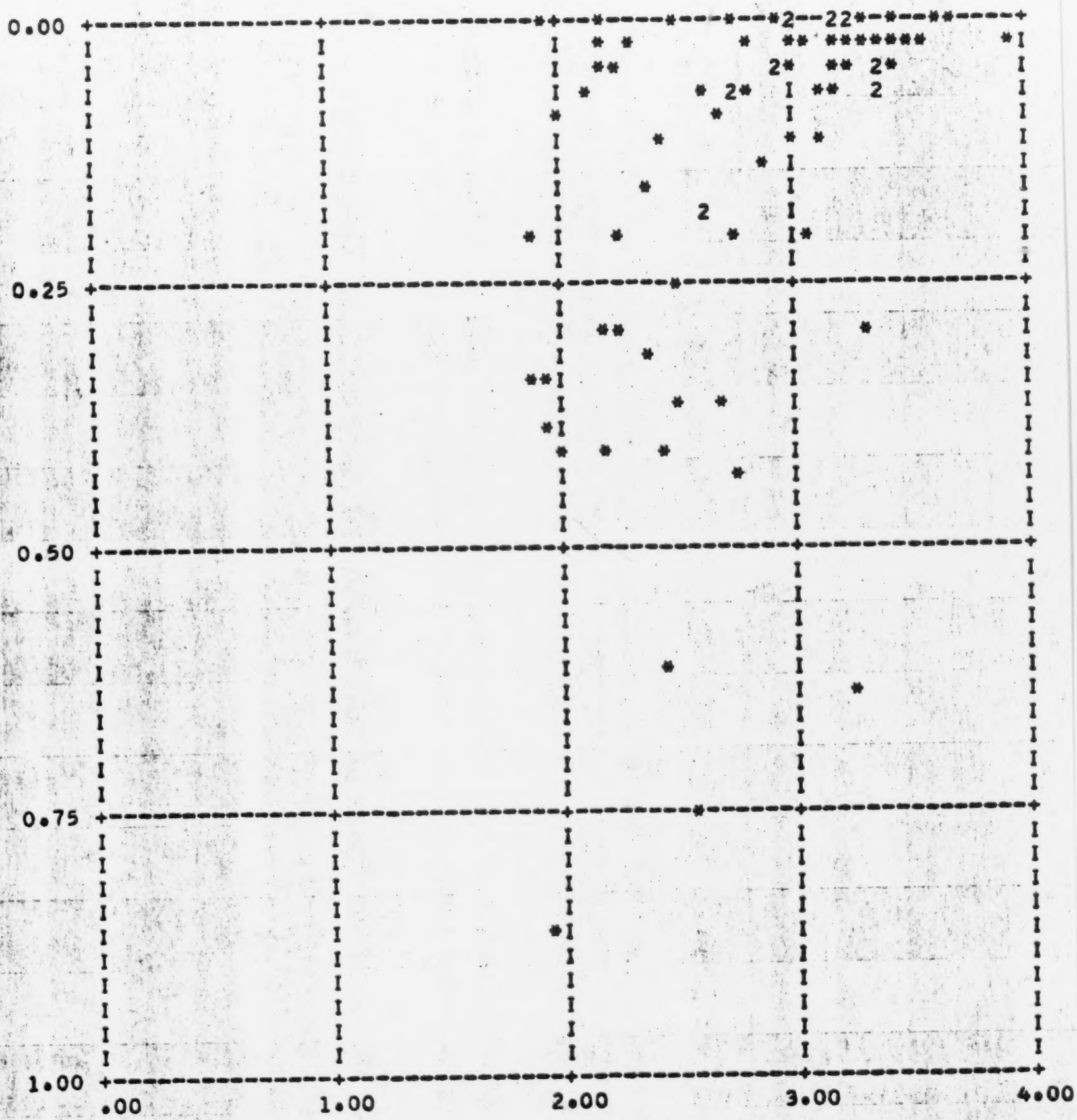
CHART XXIII
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ENGLISH,
SEPTEMBER, 1965, TO DATE



* 75 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

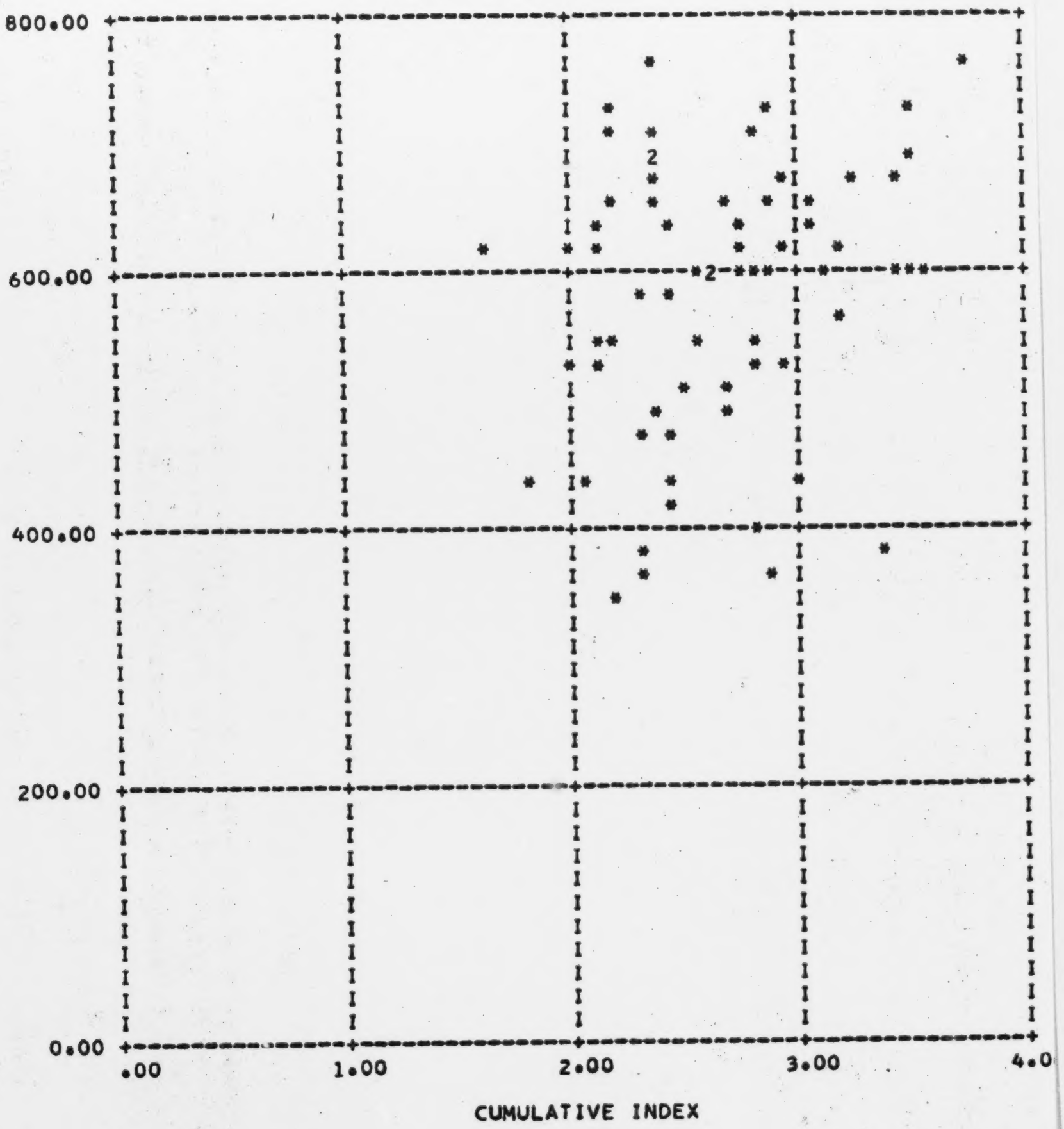
CHART XXIV
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN ENGLISH,
SEPTEMBER, 1965, TO DATE



* 78 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

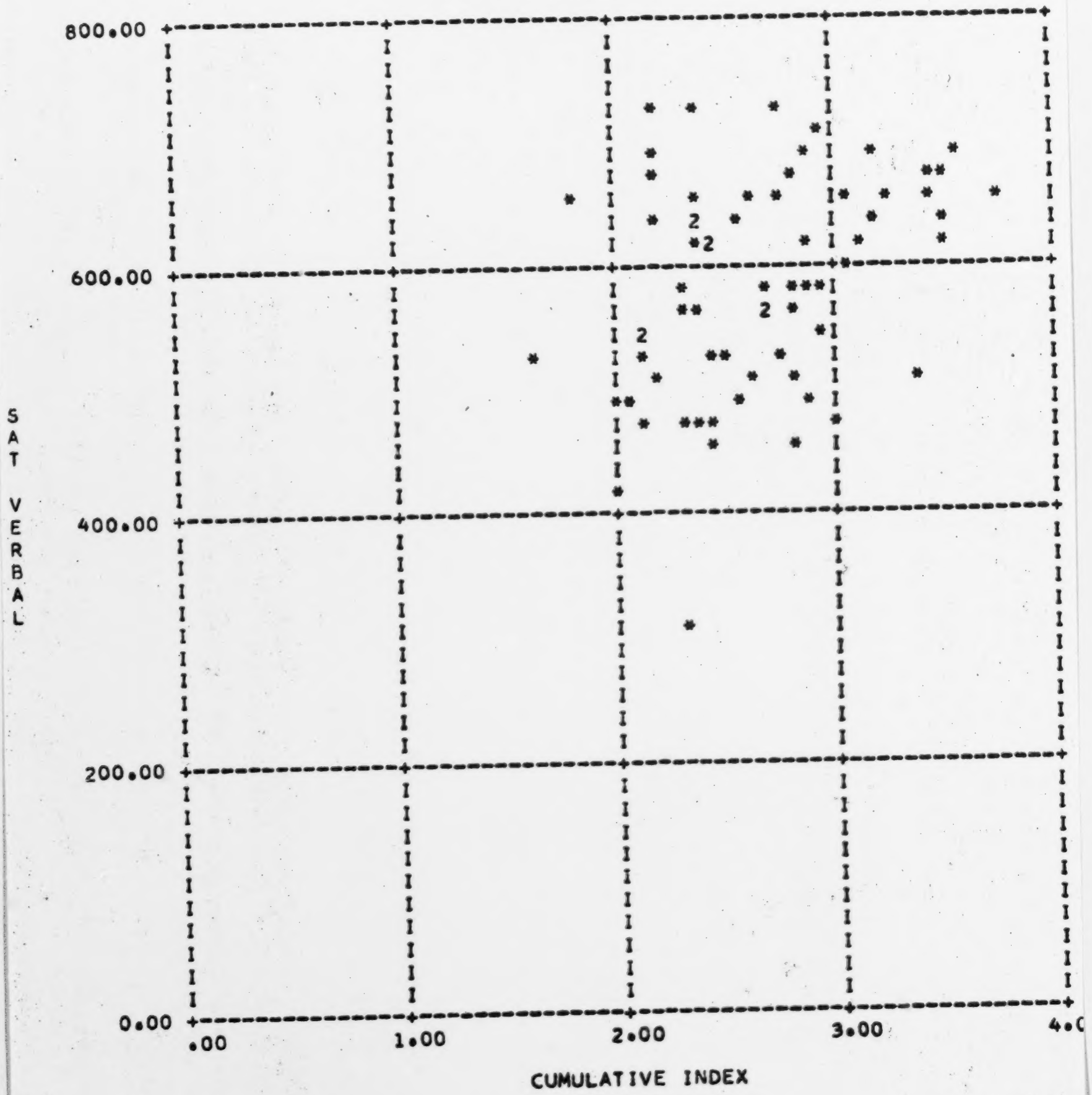
CHART XXXIV
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN HISTORY,
SEPTEMBER, 1965, TO DATE



* 68 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

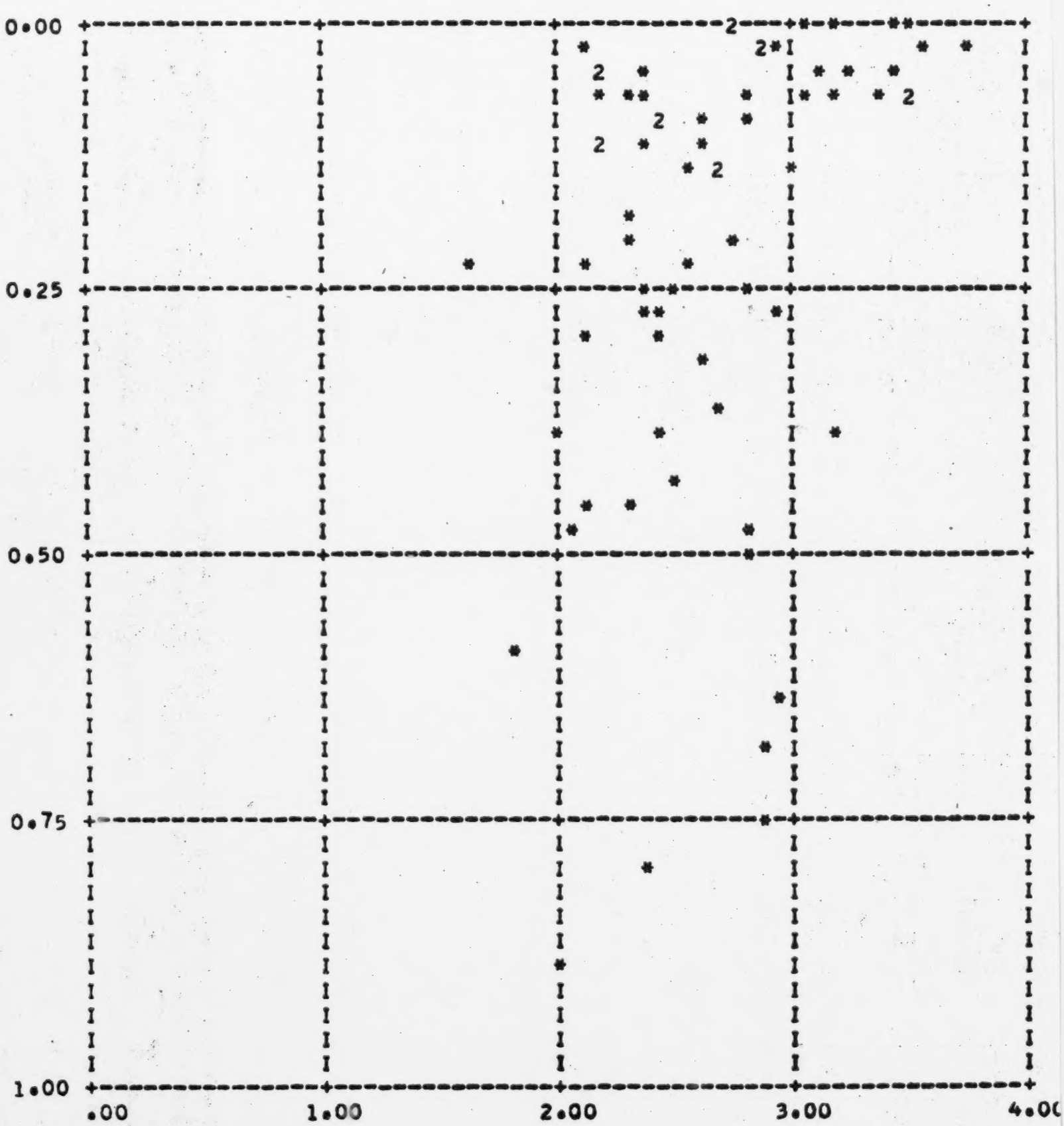
CHART XXXV
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN HISTORY,
SEPTEMBER, 1965, TO DATE



* 68 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

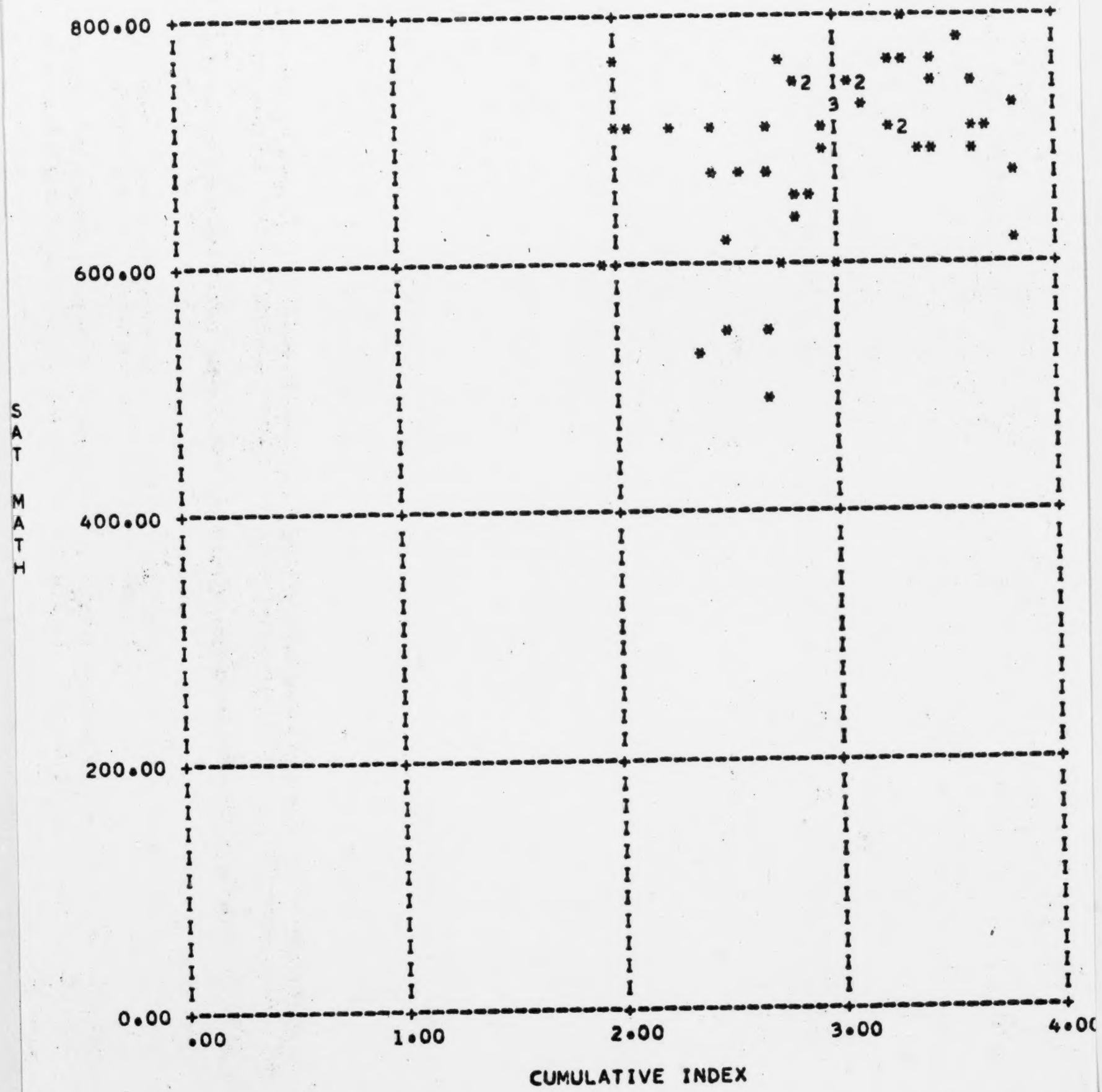
CHART XXXVI
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN HISTORY,
SEPTEMBER, 1965, TO DATE



* 70 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

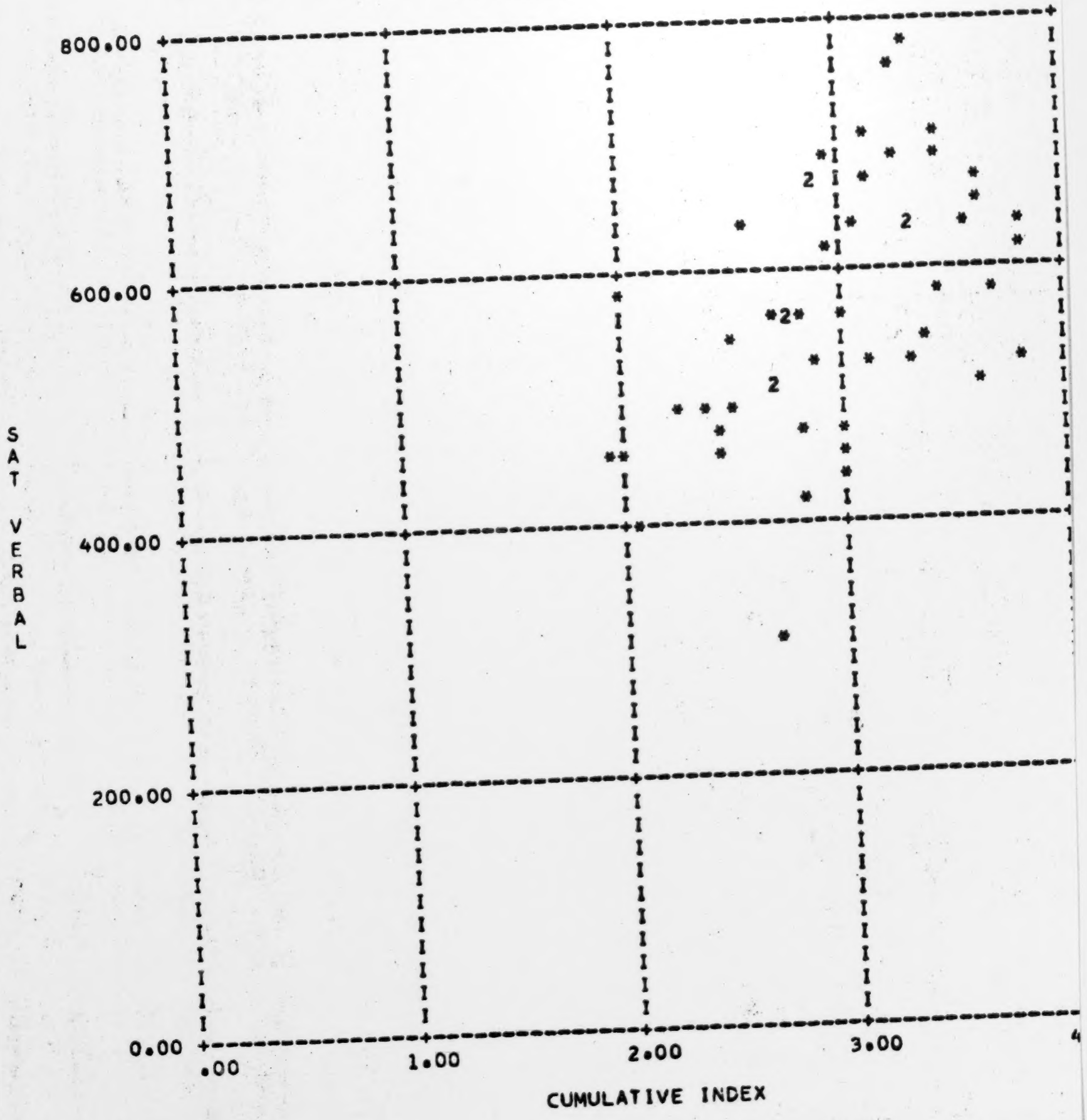
CHART XL
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN MATHEMATICS,
SEPTEMBER, 1965, TO DATE



* 51 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

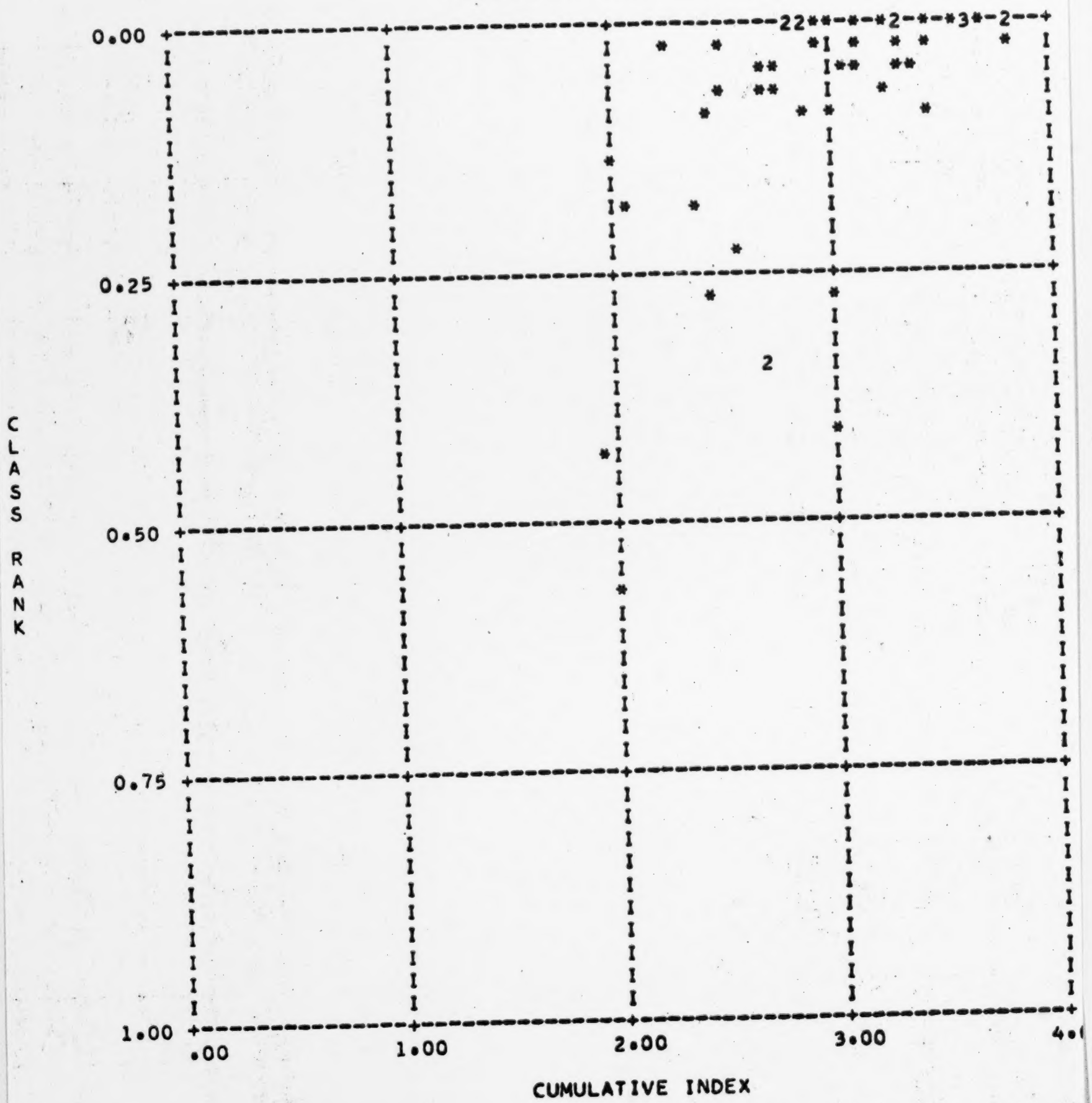
CHART XLI
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN MATHEMATICS,
SEPTEMBER, 1965, TO DATE



* 51 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

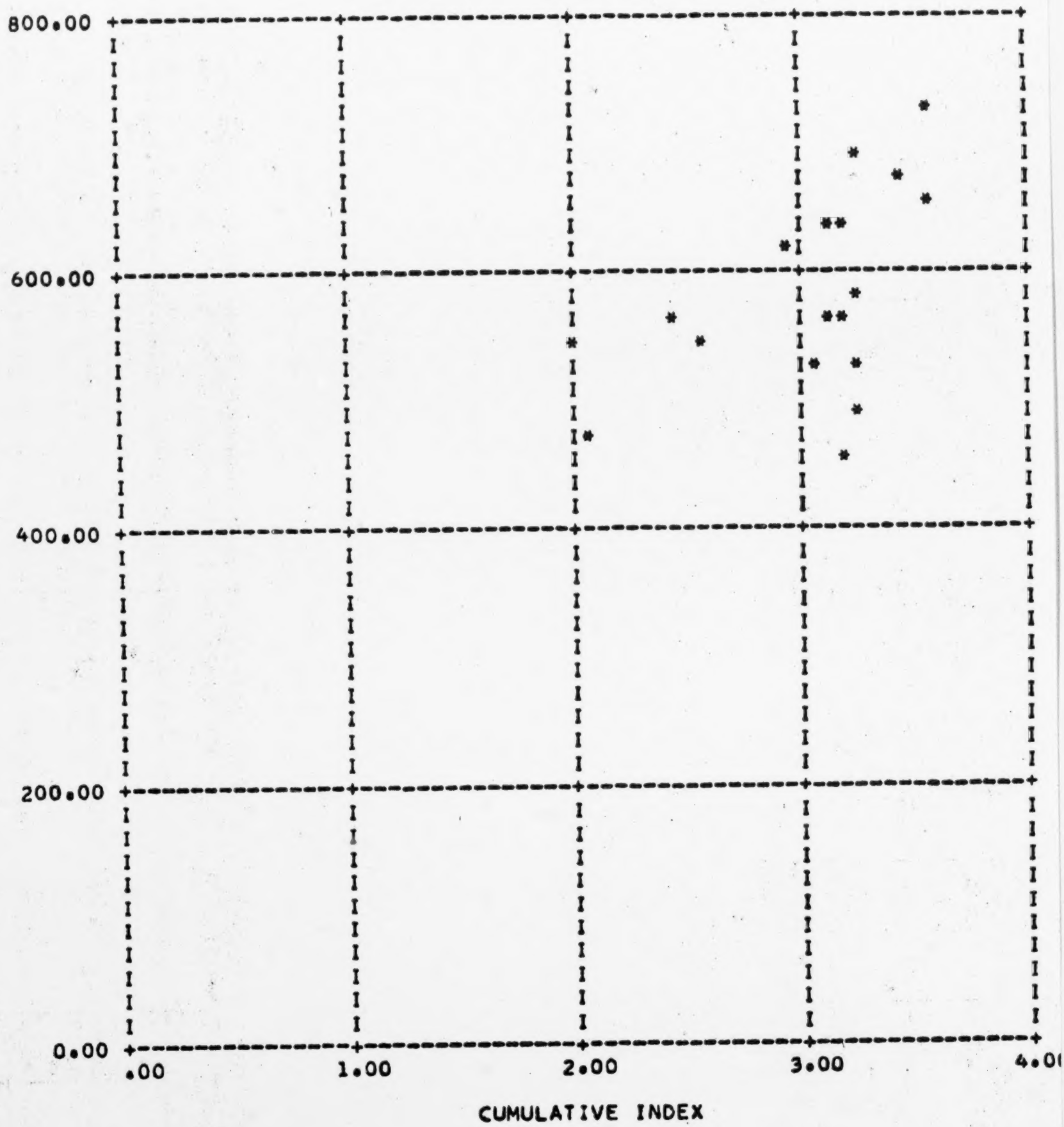
CHART XLII
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN MATHEMATICS,
SEPTEMBER, 1965, TO DATE



* 50 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

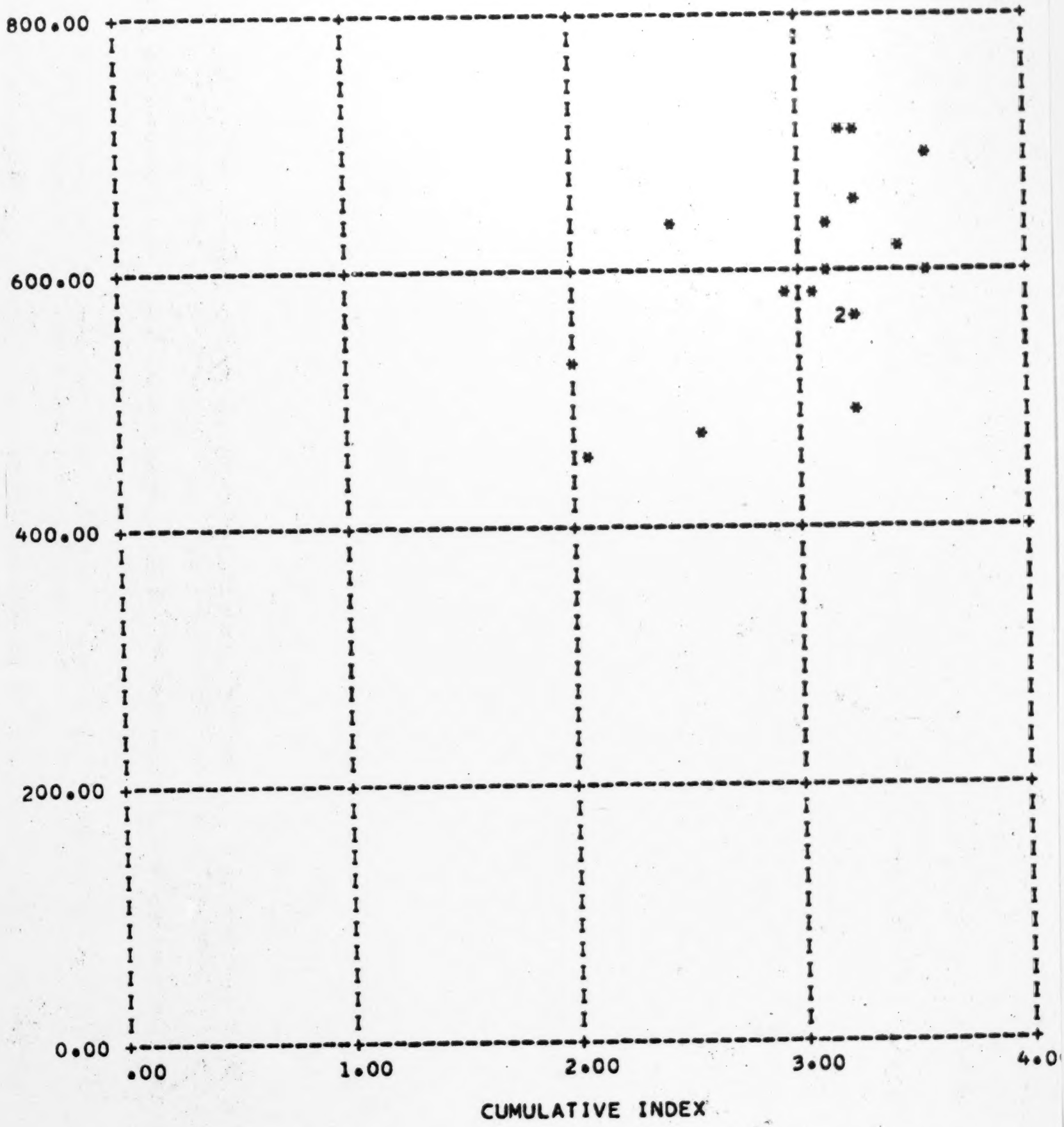
CHART XLIII
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN MODERN LANGUAGES,
SEPTEMBER, 1965, TO DATE



* 18 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

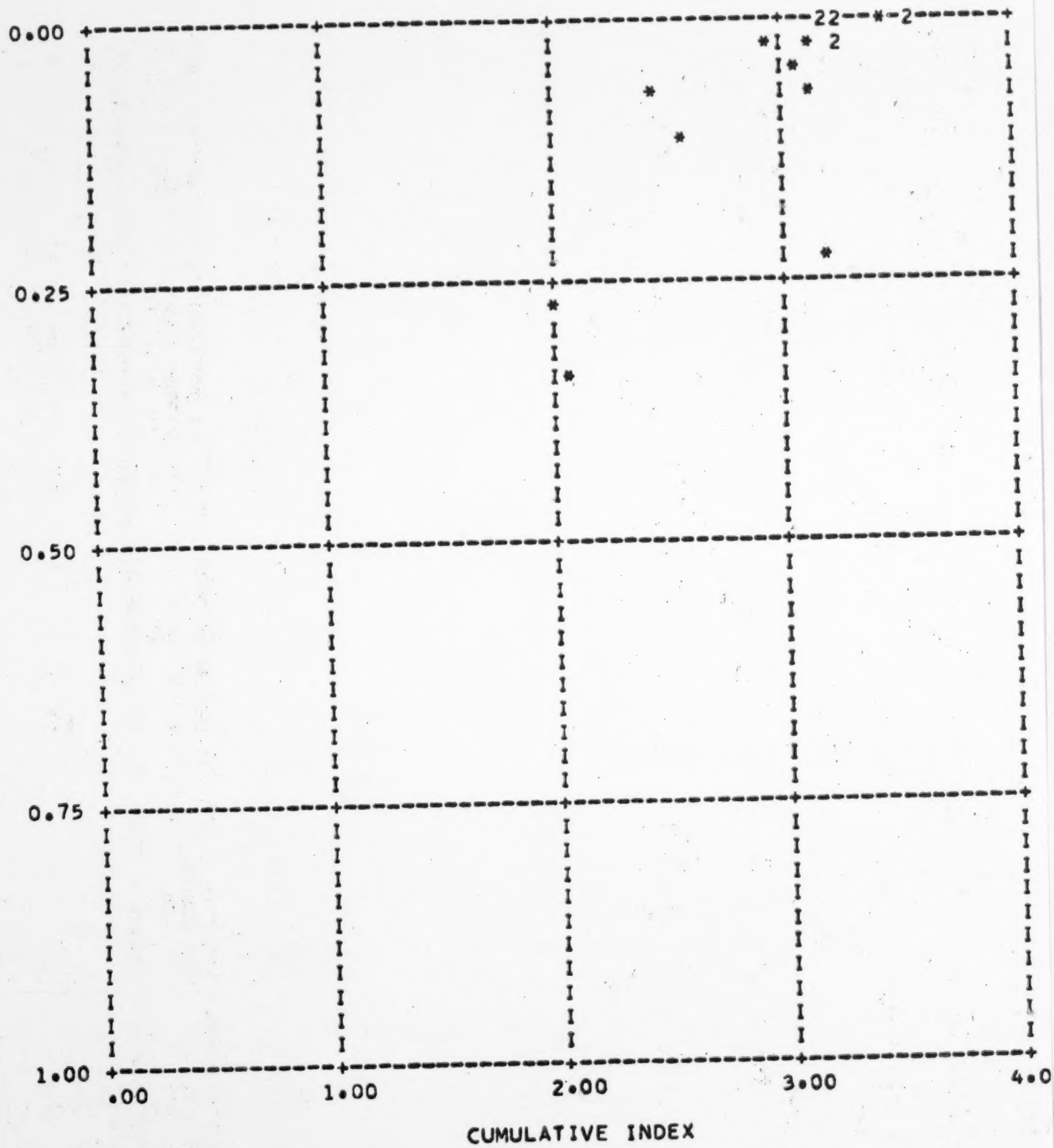
CHART XLIV
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN MODERN LANGUAGES,
SEPTEMBER, 1965, TO DATE



* 18 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

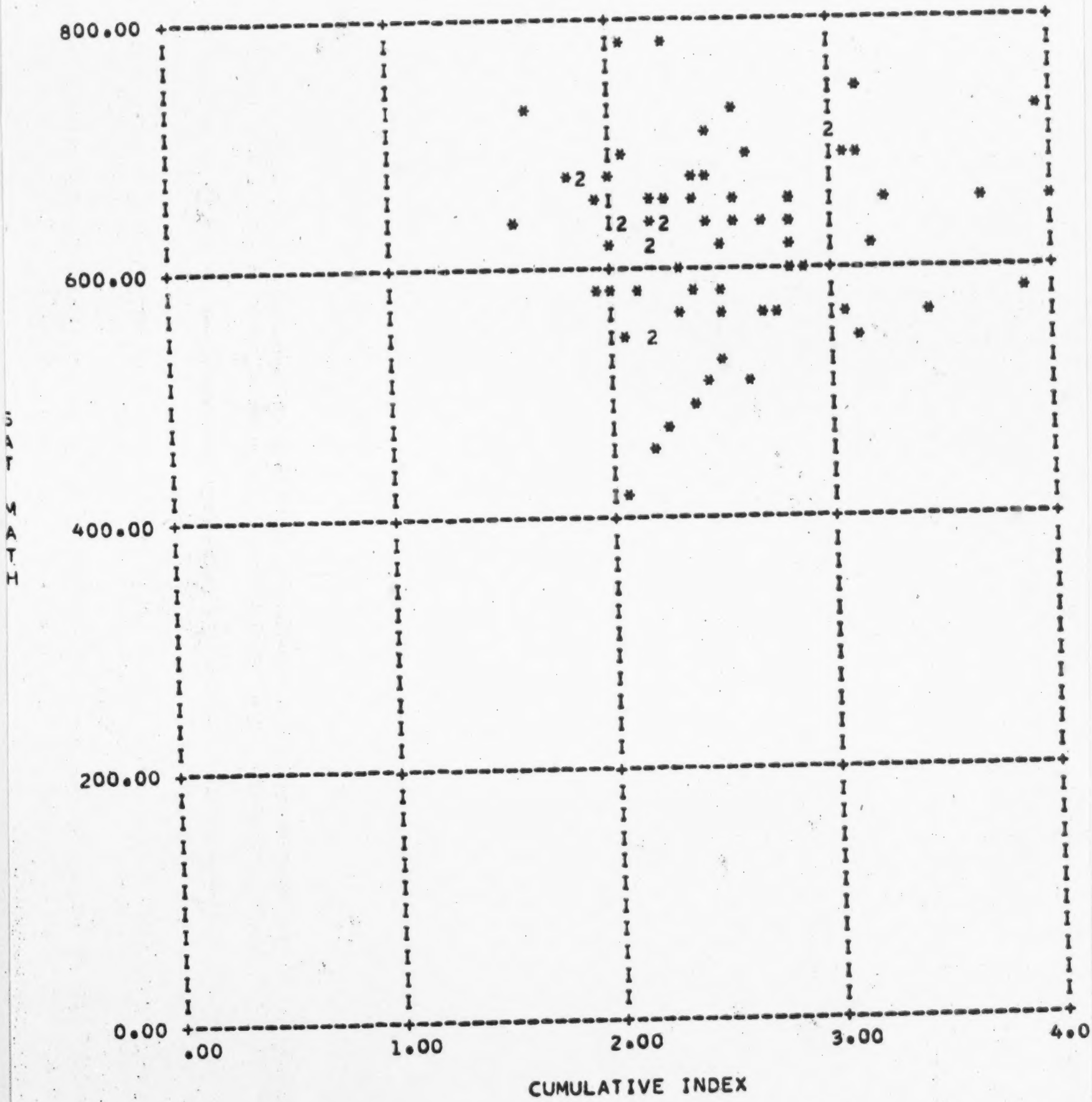
CHART XLV
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN MODERN LANGUAGES,
SEPTEMBER, 1965, TO DATE



* 18 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

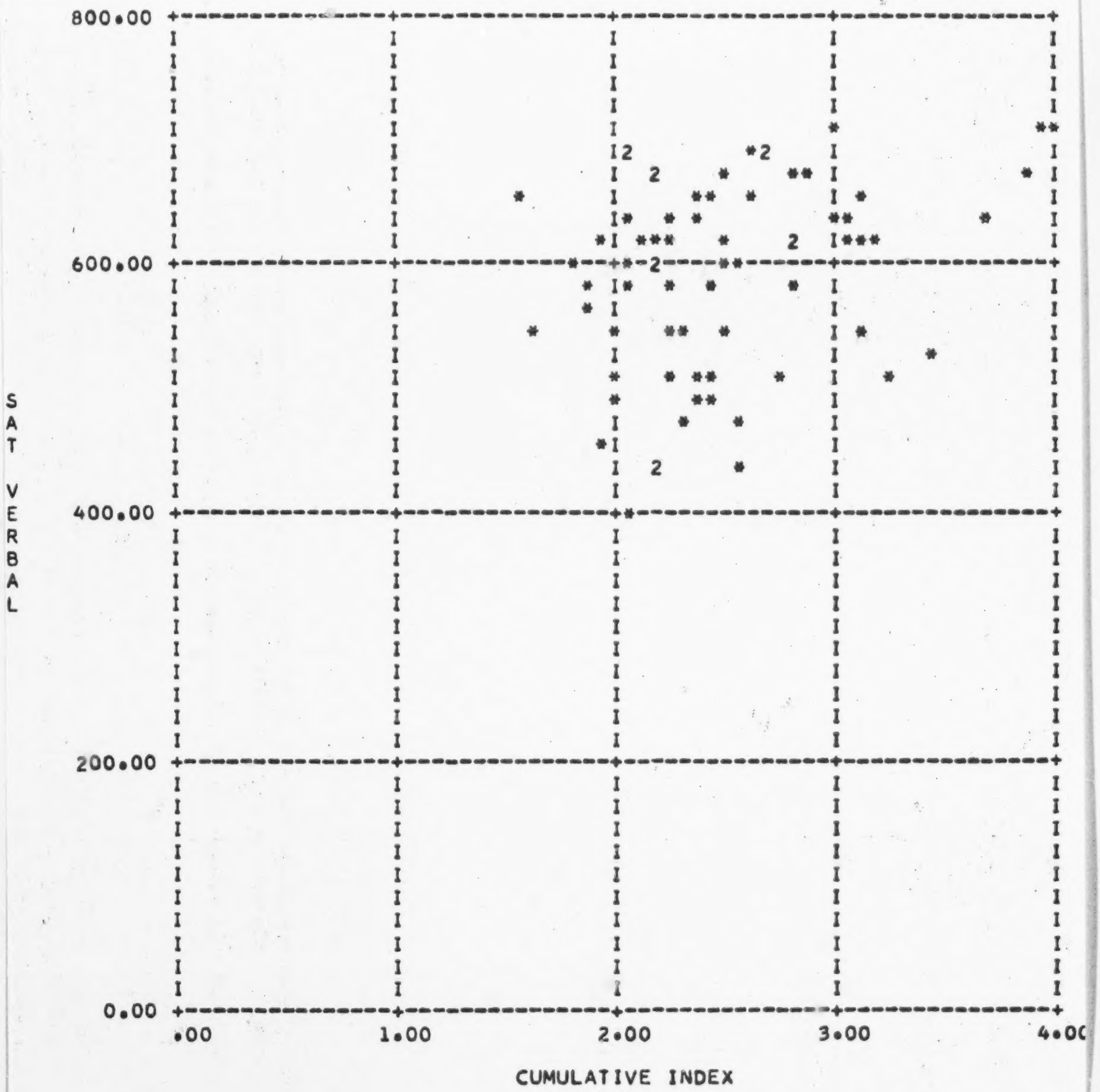
CHART LV
SCATTER DIAGRAM OF MATH SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN POLITICAL SCIENCE,
SEPTEMBER, 1965, TO DATE



* 70 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

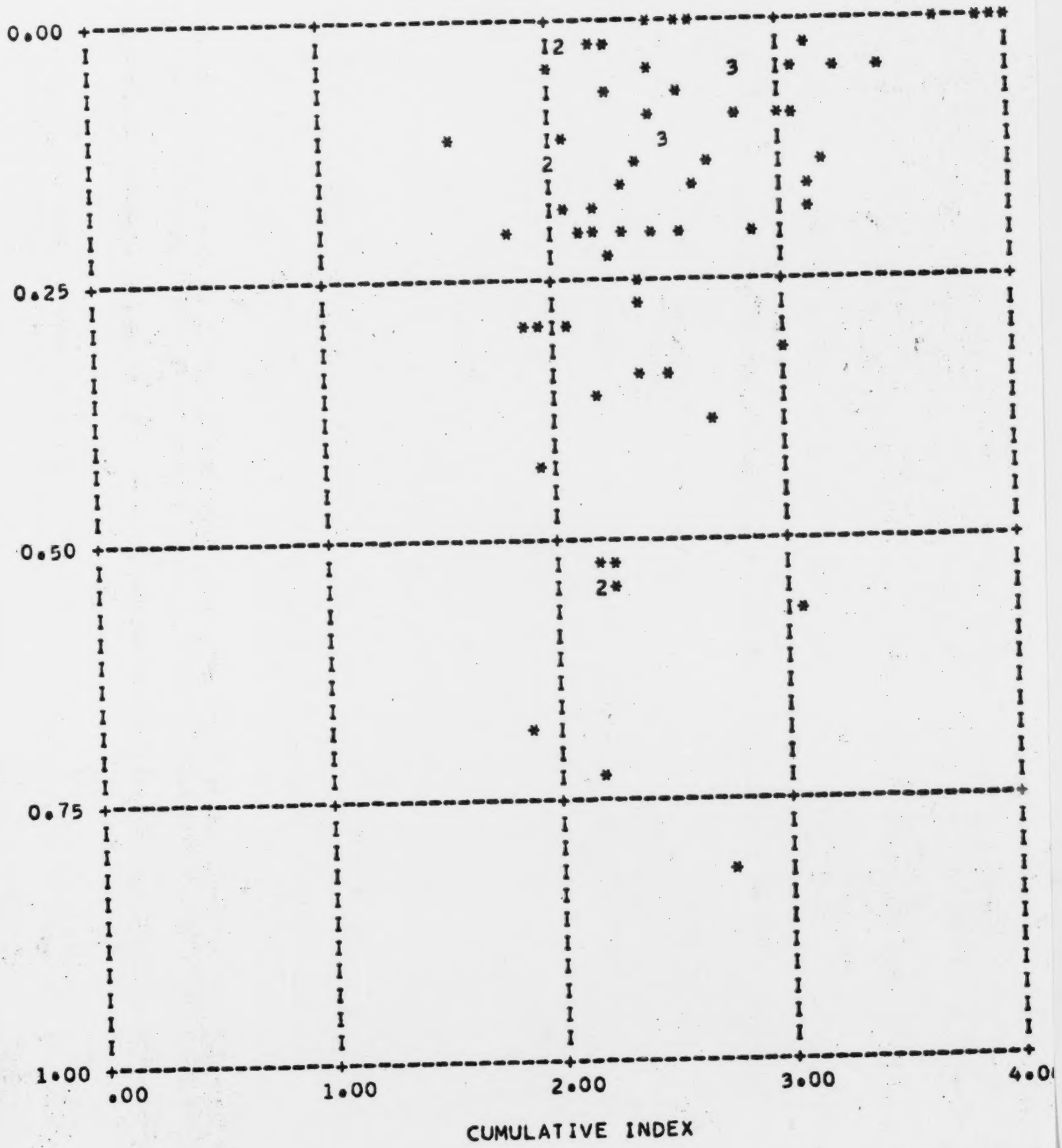
CHART LVI
SCATTER DIAGRAM OF VERBAL SAT SCORES AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN POLITICAL SCIENCE,
SEPTEMBER, 1965, TO DATE



* 70 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

CHART LVII
SCATTER DIAGRAM OF H S CLASS RANKS AND CUMULATIVE INDICES,
KNOX COLLEGE GRADUATES* MAJORING IN POLITICAL SCIENCE,
SEPTEMBER, 1965, TO DATE



* 70 STUDENTS

SOURCE - COMPUTER CENTER, JUNE, 1968

Appendix IX

Monmouth College
Monmouth, Ill. 61462
2 August 1968

Dr. George Melville, Director
Institutional Research
Knox College
Galesburg, Illinois

Dear George:

This letter contains a brief summary of the activities in which the office participated during the first year of the CORD Grant.

There have been three seed grants awarded to Monmouth College and each is progressing satisfactorily. Professor Wingo has completed the filming of the five video tapes which will be used during the first two terms of the 1968-9 academic year. Professor Wills is in the process of filming 16-mm motion pictures to be used in Geology classes (Introductory) during the 1968-9 academic year. Mr. Hill has completed the summer studies concerning the teaching of woodwind techniques using the kinesthetic approach and plans to compile his results during the fall term of this academic year.

At the request of the Dean of the College, this office has compiled the student-teaching load for each faculty member for each term of the past academic year and is in the process of preparing a consolidated report for the entire year. Various reports have been compiled for the State Board of Higher Education (Illinois) during the past year. A list of all entering Freshmen for the 1967-8 year was forwarded recently to the CEEB at Evanston, Illinois along with their respective CEEB scores, High School rank and size of class, and date of birth. Correlation studies will be made by the CEEB and the results reported to Monmouth College. The information was forwarded on punched cards.

This office assumed the responsibility of placing the academic record of each student at Monmouth College on punched cards to be used for the Academic Status Report at the close of the third term of this past academic year. This was accomplished through the cooperation of the Data Processing Centers of Monmouth and Knox Colleges, the Office of the Registrar of both Monmouth and Knox, and various other personnel. A complete transcript check will be made before the fall term begins to verify the cumulative-to-date grade point averages of each Monmouth College student. The Academic Status Report has been programmed for the Knox College 1401 Computer by Mr. Charles Gibbs and has increased the efficiency of grade reporting many-fold. Sufficient information is now available for this office to conduct pertinent research.

Very truly yours,

Jim

James H. McAllister, Director
Institutional Research

Ch. 5: Research

IBM

INTERNATIONAL BUSINESS MACHINES CORPORATION

Form X24-6599-0
Printed in U. S. A.

MULTIPLE-CARD LAYOUT FORM

Company CORD

Application _____ by _____ Date _____ Job No. _____ Sheet No. _____

STUDENT MASTER CARD

STUDENT NUMBER	STUDENT NAME	CLASS	MAJOR	STATUS	FRAT/SOR	SEX	CEEB SCORES: VERBAL	CEEB SCORES: MATH	HIGH SCHOOL INFO: RANK	HIGH SCHOOL INFO: CLASS SIZE	HIGH SCHOOL INFO: 1/10	HIGH SCHOOL INFO: TYPE	HIGH SCHOOL INFO: GRAD YR	HIGH SCHOOL INFO: GRAD STATE	ACHIEVEMENT TEST SCORES: ENG	ACHIEVEMENT TEST SCORES: F. LANG ID	ACHIEVEMENT TEST SCORES: F. LANG	ACHIEVEMENT TEST SCORES: MATH ID	ACHIEVEMENT TEST SCORES: MATH	ACHIEVEMENT TEST SCORES: ID	ACHIEVEMENT TEST SCORES:	BIRTH INFO: DATE MO	BIRTH INFO: DATE DAY	BIRTH INFO: DATE YR	BIRTH INFO: STATE		CARD CODE
9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9	9 9	9	9	9	9 9 9	9 9 9	9 9 9 9	9 9 9 9	9	9	9 9	9 9	9 9 9	9 9	9 9 9 9	9 9	9 9 9 9	9 9	9 9 9 9	9 9	9 9 9 9	9 9	9 9 9 9	9	X
1 2 3 4 5	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	25	26 27	28	29	30	31 32 33	34 35 36	37 38 39 40	41 42 43 44	45	46	47 48	49 50	51 52 53	54 55	56 57 58	59 60	61 62 63	64 65	66 67 68	69 70	71 72	73 74	75 76	77 78 79	80

CUML TO DATE

STUDENT NUMBER	STUDENT NAME	CLASS	MAJOR	STATUS	FRAT/SOR	SEX	CUML GPA	CREDITS: TOTAL	CREDITS: TRANSFER	CURR TERM: NO.	CURR TERM: ACAD. YR	CURRENT TERM: CR ATTEMPTED	CURRENT TERM: CR EARNED	CURRENT TERM: GRADE POINTS (GP)	CURRENT TERM: GPA	CUMULATIVE: CR ATTEMPTED	CUMULATIVE: CR EARNED	CUMULATIVE: GRADE POINT (GP)	
9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9	9 9	9	9	9	9 9 9	9 9 9	9 9 9 9 9	9	9 9 9	9 9 9 9	9 9 9 9	9 9 9 9 9	9 9 9 9	9 9 9 9 9	9 9 9 9 9	9 9 9 9 9 9	2
1 2 3 4 5	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	25	26 27	28	29	30	31 32 33 34	35 36 37	38 39 40 41 42	43	44 45 46	47 48 49 50	51 52 53 54	55 56 57 58 59	60 61 62 63	64 65 66 67 68	69 70 71 72 73	74 75 76 77 78 79	80

9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9

Appendix X

KE FOREST COLLEGE LAKE FOREST, ILLINOIS

STUDENT PERSONNEL SERVICES

MARIJUANA USAGE - LAKEFOREST COLLEGE STUDENTS

By use of the questionnaire technique a study was made of the extent of marijuana usage among the currently enrolled students. Questionnaires were distributed at a meeting of most of the housing units of the campus. The questionnaires were presented by a student and every effort was made to seek high percentage of response, as much accuracy as possible and complete anonymity. Questionnaires were collected on the spot and taken with one of the group present as a witness to a central collecting point where they were merged with other questionnaires. This was done to avoid any possibility of identification of the answers for a group with a particular residence hall. Three housing units were not polled, two for men and one for women, due to considerable hesitation about the internal rapport of the group. A total of 716 responses representing 88 % of the group questioned was received.

SOME HIGHLIGHTS

Estimate the number of currently enrolled that have ever used M	560
Estimate .....used M within past six months	425
Estimate.....would you describe as"potheads"?	45
Estimate .... for whom you consider M to be a bad problem, that is, significantly affecting their present life	19
How many students have ever smoked marijuana?	40 %
For those who have used M within past 12 months, what is typical use pattern?	About twice per month.

ADDED COMMENTS

Users come from Suburbia and Big City with few small town or rural.
High correlation between users of M and cigarette smoking.
Men are significantly greater users than women.
Estimates of usage run significantly higher than actual usage.
Non-users estimate significantly more usage than users.
Supply of M is perceived as easily obtainable by non-users and as "erratic" by users.

Other analyses under way include age of first usage, usage by age groups,etc.

Appendix X Lake Forest

QUESTIONNAIRE

AGE:_____ SEX: M_____ F_____

AREA OF HOMETOWN RESIDENCE MOST OF THREE YEARS PRIOR TO ENROLLMENT.

BIG CITY _____
SUBURB _____
SMALL TOWN OR RURAL _____

ARE YOU AN HABITUAL CIGARETTE SMOKER? YES_____ NO_____

*****

1. Estimate how many currently enrolled students have ever smoked marijuana. (The reference is to students at this institution) _____

2. Estimate how many currently enrolled students have smoked marijuana within the past six months. _____

3. Estimate how many currently enrolled students are currently using marijuana (let's say once a week or oftener) _____

4. Estimate how many currently enrolled students would you describe as "potheads"? _____

5. Estimate the number of currently enrolled students for whom you consider marijuana to be a bad problem...that is, significantly affecting their present life. _____

6. Using knowledge rather than estimate, how many students have smoked marijuana within the past six months. _____

7. Knowledge again: How many students are currently using marijuana? (Let's say once a week or oftener). _____

8. Have you ever smoked marijuana? YES_____ NO_____

9. If you have used marijuana any time within the past twelve months, please check the most appropriate one of the following to describe your pattern of usage.

   a. Several times per week or oftener. _____
   b. About once a week _____
   c. Several times per month _____
   d. About once a month _____
   e. Less than once a month, but several times per year. _____
   f. No more than one or two per year _____

10. How would you describe the present availability of marijuana?

   a. Eastily obtainable almost all the time _____
   b. Erratic supply, ranging from very easy, very difficult. _____
   c. Only moderately difficult _____
   d. Great difficulty _____

Comment: _____

MORE-----

PAGE TWO - QUESTIONNNAIRE

11. If you have ever used marijuana, estimate your age at the first usage. _____

12. If you have ever smoked marijuana, comment on why you are using it more or less in the past six months.

Comment: _____

_____

_____

13. Describe your first experience with marijuana omitting for the moment any comments "why" you first tried it and simply mentioning the circumstances, source of supply, feelings about it, like or dislike.

Comment: _____

_____

_____

_____

14. Check any of the following which you believe describe the reasons why marijuana may be desirable.

a. Makes one feel good _____
b. Pleasant hallucinations _____
c. Relief of worry and tension _____
d. It is fun _____
e. It is an enjoyable shared social experience _____
f. Other: _____

15. Students who use it may be described as: (check any one or more)

a. Concerned about the identity crisis _____
b. Enjoy the social experience _____
c. Alienated from the general student body _____
d. Alienated from parents _____

16. Remarks: _____

_____

_____

_____

4/68
HEW Grant

APPENDIX XI

MULTIPLE CORRELATIONS: DEPENDENT VARIABLES--FIRST YEAR INDEX, CUMULATIVE INDEX, GRADUATE RECORD ADVANCE TEST SCORES; INDEPENDENT VARIABLES-SAT MATH, SAT VERBAL, HIGH SCHOOL PERCENTILE CLASS RANK, WEIGHTED HIGH SCHOOL CLASS RANK, CLASSIFIED BY DEPARTMENTS--SUB-CLASSIFICATION: GRADUATES, ALL MAJORS, SEPTEMBER, 1965, TO DATE

Office of Institutional Research
Knox College
July, 1968

TABLE I

MULTIPLE CORRELATION OF CUMULATIVE INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) CLASSIFIED BY MAJOR FIELD,* KNOX GRADUATES, SEPTEMBER, 1965, TO DATE

Area and Department	Number of Students	Cumulative Index Mean	Cumulative Index Standard Deviation	Mean SAT Math	Mean SAT Verbal	Mean Class Rank	Simple Correlation X_2	Simple Correlation X_3	Simple Correlation X_4	Multiple Correlation
UMANITIES										
Art	21	2.57	.42	564	569	.26	-.20	.54	.58	.64+
English	71	2.77	.51	594	631	.15	.38	.42+	.55+	.64+
French	16	2.72	.51	565	569	.08	-.09	-.07	.25	.26
Mod. Languages	18	3.00	.46	578	587	.08	.53	.53	.79+	.85+
Music	9	2.59	.49	576	561	.16	.42	.57	.72+	.88
Philosophy	10	2.73	.54	646	597	.27	.23	.61	.64+	.78
Spanish	11	2.65	.32	535	540	.16	.39	.06	.02	.46
Speech	14	2.59	.34	562	600	.19	.33	.67	.49	.70
CIENCE-MATH										
Biology	47	2.61	.48	596	563	.18	.30	.39	.51+	.57+
Chemistry	46	2.72	.46	637	554	.16	.04	.10	.09	.17
Mathematics	48	2.99	.47	689	570	.09	.39	.54	.59+	.66+
Physics	14	2.97	.60	682	592	.14	.45	.17	.42	.58
Psychology	25	2.49	.44	594	559	.20	.20	.38	.48+	.58+
OCIAL STUDIES										
Economics	63	2.53	.40	623	553	.22	.35	.37+	.48+	.55+
History	63	2.65	.46	583	586	.20	.24	.32	.38+	.44+
Political Sci.	66	2.50	.50	617	588	.20	.13	.30+	.35+	.43+
Russian Area St.	6	2.86	.55	568	589	.13	.60	.81	.73	.86
Sociology	43	2.53	.48	580	569	.23	.38+	.30	.54+	.63+
EDUCATION	42	2.65	.36	537	551	.12	.47+	.37	.50	.61+

Source: Computer Center
July, 1968

* Department with five or more majors

\+ .05 level of sigificance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero.

TABLE II

MULTIPLE CORRELATION OF FIRST YEAR INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) CLASSIFIED BY MAJOR FIELD,* KNOX GRADUATES, SEPTEMBER, 1965, TO DATE

Area and Department	First Year Index		Simple Correlation			Multiple Correlation	
	Mean	Standard Deviation	X_2	X_3	X_4	First Year Index	Cumulative Index
HUMANITIES							
Art	2.29	.59	-.10	.60	.56	.64+	.64+
English	2.59	.62	.41+	.34	.61+	.67+	.64+
French	2.51	.58	-.09	-.02	.20	.21	.26
Mod. Languages	2.66	.52	.49	.42	.81+	.86	.85+
Music	2.44	.47	.48	.60	.66+	.82+	.88
Philosophy	2.49	.76	.15	.61	.64	.79	.78
Spanish	2.50	.41	.43	-.01	.14	.58	.46
Speech	2.24	.46	.35	.70+	.40	.74+	.70
SCIENCE-MATH							
Biology	2.36	.54	.28	.39	.44+	.52+	.57+
Chemistry	2.59	.52	.05	.14	.29	.30	.17
Mathematics	2.90	.55	.30	.60+	.53+	.65+	.66+
Physics	2.93	.62	.50	.15	.40	.60	.58
Psychology	2.15	.46	.11	.51+	.22	.56+	.58+
SOCIAL STUDIES							
Economics	2.21	.54	.31	.39+	.37	.49+	.55+
History	2.37	.59	.25	.42+	.42+	.52+	.44+
Political Sci.	2.35	.60	.15	.32+	.38+	.46+	.43+
Russian Area St.	2.79	.59	.60	.74	.83	.88	.86
Sociology	2.25	.54	.37	.22	.49+	.59+	.63+
EDUCATION	2.28	.46	.39	.28	.46+	.54+	.61+

Source: Computer Center
July, 1968

*Department with five or more majors.

+ .05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero.

TABLE III

MULTIPLE CORRELATION OF GRADUATE RECORD ADVANCED TEST SCORES (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3), AND HIGH SCHOOL CLASS RANK (X_4) CLASSIFIED BY MAJOR FIELD,* KNOX GRADUATES, SEPTEMBER, 1965, TO DATE

Area and Department	Graduate Record Exam Mean	Standard Deviation	Simple Correlation X_2	X_3	X_4	Multiple Correlation
HUMANITIES						
English	603	83	.31	.56+	.47+	.65+
SCIENCE-MATH						
Biology	626	81	.36	.43+	.21	.47+
Chemistry	574	74	.13	.33+	.05	.37
Mathematics	651	113	.56+	.39	.24	.57+
Physics	582	155	.53	.48	.39	.69
Psychology	540	65	.19	.35	.20	.38
SOCIAL STUDIES						
Economics	619	73	.39+	.53+	.31	.60+
History	556	76	.23	.30	.29	.37
Political Sci.	525	78	.22	.56+	.27	.59+
Sociology	519	83	.29	.70+	.20	.75+

Source: Computer Center
July, 1968

* Department with five or more majors.

\+ .05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero.

TABLE IV

MULTIPLE CORRELATION OF CUMULATIVE INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X3) AND HIGH SCHOOL CLASS RANK (X4) ALL KNOX STUDENTS DECLARING A MAJOR,* SEPTEMBER, 1965, TO DATE

Area and Department	Number of Students	Cumulative Index Mean	Cumulative Index Standard Deviation	Mean SAT Math	Mean SAT Verbal	Mean Class Rank	Simple Correlation X_2	Simple Correlation X_3	Simple Correlation X_4	Multiple Correlation
HUMANITIES										
Art	50	2.49	.47	572	553	.24	.04	.31	.53+	.55+
English	150	2.63	.58	590	620	.16	.34+	.48+	.55+	.63+
French	35	2.63	.44	570	575	.11	.15	.20	.18	.30
German	12	3.11	.44	619	631	.03	.09	.28	.61+	.63
Mod. Languages	38	2.92	.43	597	589	.11	.36	.58+	.68+	.77+
Music	18	2.68	.55	581	565	.13	.58	.48	.73+	.75+
Philosophy	17	2.73	.58	662	599	.24	.02	.25	.60+	.63
Spanish	21	2.72	.43	545	545	.15	.32	.63+	.22	.63+
Speech	34	2.48	.47	574	576	.21	.18	.39	.27	.41
SCIENCE-MATH										
Biology	90	2.56	.49	599	554	.17	.20	.40+	.32+	.47+
Chemistry	79	2.80	.49	643	565	.14	.18	.24	.14	.27
Geology	10	2.31	.38	608	564	.21	.63	.30	.13	.65
Mathematics	89	2.87	.54	689	577	.09	.19	.41+	.34	.44+
Physics	33	2.97	.59	700	624	.12	.50+	.27	.36	.57+
Psychology	44	2.56	.53	615	578	.17	.36	.47+	.42	.55+
SOCIAL STUDIES										
Economics	140	2.45	.47	616	552	.23	.36+	.38+	.45+	.55+
History	132	2.58	.51	582	582	.20	.16	.37+	.43+	.49+
Political Sci.	125	2.51	.50	614	593	.22	.10	.30+	.34+	.42+
Russian Area St.	6	2.86	.55	568	589	.13	.60	.81	.73	.86
Sociology	98	2.41	.49	581	564	.23	.19	.30+	.27+	.37+
EDUCATION	77	2.51	.44	541	543	.15	.32	.34	.46+	.52+

Source: Computer Center
July, 1968

*Department with five or more majors.

+ .05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero.

TABLE V

MULTIPLE CORRELATION OF FIRST YEAR INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) ALL KNOX STUDENTS DECLARING A MAJOR*, SEPTEMBER, 1965, TO DATE

Area and Department	First Year Index Mean	First Year Index Standard Deviation	Simple Correlation X_2	Simple Correlation X_3	Simple Correlation X_4	Multiple Correlation
HUMANITIES						
Art	2.30	.57	-.06	.34	.49+	.53+
English	2.49	.60	.39+	.42+	.54+	.62+
French	2.48	.52	.18	.23	.07	.27
German	3.00	.62	.05	.45	.78+	.84+
Mod. Languages	2.66	.47	.27	.44	.50+	.57+
Music	2.60	.61	.64	.51	.75+	.77+
Philosophy	2.49	.71	-.10	.42	.62+	.72+
Spanish	2.47	.50	.33	.42	.11	.45
Speech	2.15	.50	.22	.37	.17	.40
SCIENCE-MATH						
Biology	2.36	.53	.17	.41+	.34+	.49+
Chemistry	2.68	.51	.14	.26	.39+	.42+
Geology	2.00	.49	.60	.54	.04	.70
Mathematics	2.83	.55	.21	.47+	.36	.51+
Physics	2.90	.61	.52+	.18	.36	.59+
Psychology	2.30	.57	.38	.64+	.30	.65+
SOCIAL STUDIES						
Economics	2.23	.54	.33	.43+	.42+	.54+
History	2.39	.60	.19	.40+	.44+	.52+
Political Science	2.34	.58	.17	.26+	.35+	.41+
Russian Area St.	2.79	.59	.60	.74	.83	.88
Sociology	2.21	.53	.27+	.27	.31+	.42+
EDUCATION	2.18	.47	.30	.29	.52+	.56+

Source: Computer Center
July, 1968

* Department with five or more majors.

\+ .05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero.

TABLE VI

COMPARISONS OF SIMPLE AND MULTIPLE CORRELATION COEFFICIENTS FOR CUMULATIVE INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) WITH CORRESPONDING CORRELATIONS USING WEIGHTED HIGH SCHOOL CLASS RANKS (X_5), CLASSIFIED BY MAJOR FIELD,* KNOX GRADUATES, SEPTEMBER, 1965, TO DATE

Area and Department	Number of Students	Simple Correlation		Multiple Correlation	
		$r_{1.4}$	$r_{1.5}$	$r_{1.234}$	$r_{1.235}$
HUMANITIES					
Art	21	.58	.65+	.64+	.69+
English	71	.55+	.62+	.64+	.67+
French	16	.25	.46	.26	.48
Mod. Languages	18	.79+	.80+	.85+	.85+
Music	9	.72+	.67+	.88	.78
Philosophy	10	.64+	.64+	.78	.70
Spanish	11	.02	.24	.46	.48
Speech	14	.49	.77+	.70	.80+
SCIENCE-MATH					
Biology	47	.51+	.40+	.57+	.51+
Chemistry	46	.09	.15	.17	.16
Mathematics	48	.59+	.68+	.66+	.70+
Physics	14	.42	.48	.58	.58
Psychology	25	.48+	.50+	.58+	.62+
SOCIAL STUDIES					
Economics	63	.48+	.49+	.55+	.58+
History	63	.38+	.48+	.44+	.51+
Political Sci.	66	.35+	.37+	.43+	.44+
Russian Area St.	6	.73	.83	.86	.89
Sociology	43	.54+	.57+	.63+	.67+
EDUCATION	42	.50	.44	.61+	.57+

Source: Computer Center, October, 1968

*Department with five or more majors.

+.05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero. A + symbol after a multiple correlation coefficient indicates an .05 level of significance or better achieved in an analysis of variance.

TABLE VII

COMPARISONS OF SIMPLE AND MULTIPLE CORRELATION COEFFICIENTS FOR FIRST YEAR INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) WITH CORRESPONDING CORRELATIONS USING WEIGHTED HIGH SCHOOL CLASS RANKS (X_5), CLASSIFIED BY MAJOR FIELD,* KNOX GRADUATES, SEPTEMBER, 1965, TO DATE

Area and Department	Simple Correlation		Multiple Correlation	
	$r_{1.4}$	$r_{1.5}$	$r_{1.234}$	$r_{1.235}$
HUMANITIES				
Art	.56	.61	.64+	.67+
English	.61+	.64+	.67+	.68+
French	.20	.52+	.21	.53
Modern Languages	.81+	.78+	.86	.84+
Music	.66+	.67+	.82+	.81
Philosophy	.64	.65+	.79	.79
Spanish	.14	.39	.58	.65
Speech	.40	.61	.74+	.75+
SCIENCE-MATH				
Biology	.44+	.39+	.52+	.50+
Chemistry	.29	.40+	.30	.41
Mathematics	.53+	.60+	.65+	.70+
Physics	.40	.49	.60	.63
Psychology	.22	.28	.56+	.61+
SOCIAL STUDIES				
Economics	.37	.41+	.49+	.53+
History	.42+	.52+	.52+	.58+
Political Science	.38+	.44+	.46+	.50+
Russian Area St.	.83	.88	.88	.91
Sociology	.49+	.59+	.59+	.68+
EDUCATION	.46+	.52+	.54+	.55+

Source: Computer Center, October, 1968

*Department with five or more majors.

+.05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero. A + symbol after a multiple correlation coefficient indicates an .05 level of significance or better achieved in an analysis of variance.

TABLE VIII

COMPARISON OF SIMPLE AND MULTIPLE CORRELATION COEFFICIENTS FOR GRADUATE RECORD ADVANCED TEST SCORES (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) WITH CORRESPONDING CORRELATIONS USING WEIGHTED HIGH SCHOOL CLASS RANKS (X_5), CLASSIFIED BY MAJOR FIELD*, KNOX GRADUATES, SEPTEMBER, 1965, TO DATE

Area and Department	Simple Correlation $r_{1.4}$	Simple Correlation $r_{1.5}$	Multiple Correlation $r_{1.234}$	Multiple Correlation $r_{1.235}$
HUMANITIES				
English	.47+	.53+	.65+	.68+
SCIENCE-MATH				
Biology	.21	.07	.47+	.47+
Chemistry	.05	.03	.37	.36
Mathematics	.24	.32	.57+	.57+
Physics	.39	.42	.69	.68
Psychology	.20	.16	.38	.38
SOCIAL STUDIES				
Economics	.31	.26	.60+	.60+
History	.29	.29	.37	.36
Political Science	.27	.25	.59+	.59+
Sociology	.20	.46	.75+	.74+

Source: Computer Center, October, 1968

*Department with five or more majors.

+.05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero. A + symbol after a multiple correlation coefficient indicates an .05 level of significance or better achieved in an analysis of variance.

TABLE IX

COMPARISONS OF SIMPLE AND MULTIPLE CORRELATION COEFFICIENTS FOR CUMULATIVE INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) WITH CORRESPONDING CORRELATIONS USING WEIGHTED HIGH SCHOOL CLASS RANKS (X_5), ALL KNOX STUDENTS DECLARING A MAJOR*, SEPTEMBER, 1965, TO DATE

Area and Department	Number of Students	Simple Correlation $r_{1.4}$	Simple Correlation $r_{1.5}$	Multiple Correlation $r_{1.234}$	Multiple Correlation $r_{1.235}$
HUMANITIES					
Art	50	.53+	.67+	.55+	.69+
English	150	.55+	.61+	.63+	.67+
French	35	.18	.46+	.30	.51+
German	12	.61+	.55	.63	.57
Mod. Languages	38	.68+	.75+	.77+	.81+
Music	18	.73+	.64	.75+	.70+
Philosophy	17	.60+	.61+	.63	.63
Spanish	21	.22	.40	.63+	.67+
Speech	34	.27	.60+	.41	.62+
SCIENCE-MATH					
Biology	90	.32+	.32+	.47+	.50+
Chemistry	79	.14	.28	.27	.33+
Geology	10	.13	.05	.65	.70
Mathematics	89	.34	.38+	.44+	.48+
Physics	33	.36	.43	.57+	.57+
Psychology	44	.42	.45+	.55+	.58+
SOCIAL STUDIES					
Economics	140	.45+	.55+	.55+	.64+
History	132	.43+	.52+	.49+	.56+
Political Sci.	125	.34+	.41+	.42+	.47+
Russ. Area St.	6	.73	.83	.86	.89
Sociology	98	.27+	.38+	.37+	.45+
EDUCATION	77	.46+	.45+	.52+	.51+

Source: Computer Center, October, 1968

*Department with five or more majors.

+.05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero. A + symbol after a multiple correlation coefficient indicates an .05 level of significance or better achieved in an analysis of variance.

TABLE X

COMPARISONS OF SIMPLE AND MULTIPLE CORRELATION COEFFICIENTS FOR FIRST YEAR INDEX (X_1) WITH SAT MATH (X_2), SAT VERBAL (X_3) AND HIGH SCHOOL CLASS RANK (X_4) WITH CORRESPONDING CORRELATIONS USING WEIGHTED HIGH SCHOOL CLASS RANKS (X_5), ALL KNOX STUDENTS DECLARING A MAJOR*, SEPTEMBER, 1965, TO DATE

Area and Department	Simple Correlation $r_{1.4}$	Simple Correlation $r_{1.5}$	Multiple Correlation $r_{1.234}$	Multiple Correlation $r_{1.235}$
HUMANITIES				
Art	.49+	.57+	.53+	.61+
English	.54+	.59+	.62+	.64+
French	.07	.41+	.27	.49+
German	.78+	.68+	.84+	.74
Modern Languages	.50+	.62+	.57+	.65+
Music	.75+	.66	.77+	.73+
Philosophy	.62+	.66+	.72+	.74+
Spanish	.11	.34	.45	.51
Speech	.17	.49+	.40	.54+
SCIENCE-MATH				
Biology	.34+	.32+	.49+	.50+
Chemistry	.39+	.45+	.42+	.46+
Geology	.04	.14	.70	.69
Mathematics	.36	.39+	.51+	.53+
Physics	.36	.40	.59+	.57+
Psychology	.30	.34	.65+	.66+
SOCIAL STUDIES				
Economics	.42+	.50+	.54+	.61+
History	.44+	.54+	.52+	.59+
Political Science	.35+	.41+	.41+	.45+
Russian Area St.	.83	.88	.88	.91
Sociology	.31+	.44+	.42+	.51+
EDUCATION	.52+	.48+	.56+	.52+

Source: Computer Center, October, 1968

*Department with five or more majors.

+.05 level of significance or better. A + symbol behind a simple correlation coefficient is an inference from a t-test against the hypothesis that the corresponding net regression coefficients of the universe equal zero. A + symbol after a multiple correlation coefficient indicates an .05 level of significance or better achieved in an analysis of variance.

APPENDIX XII

GRADES IN ADVANCED MILITARY SCIENCE AND 300 LEVEL PHYSICAL EDUCATION

The accompanying reference table permits some comparison of grades earned in Military Science and coaching courses over the last three years as contrasted with grades earned in the students' other Knox College experience. Two exceptions may be taken to these data: (1) The total work in Military Science and 300 level P.E. taken by some of these students is not stated, while the total work of other students is stated. Thus 1965-66 seniors took Military Science in their junior year. Such work is recorded under "other courses"; i.e., courses taken at Knox other than Military Science and coaching courses taken September, 1965 to June, 1968. In such cases the grade index in other courses is biased upward slightly. (2) The grades in Military Science and in coaching were grades made at the junior and senior level while the grades in other courses were made at all levels. Since junior and senior grades are generally higher than total grades, one might complain that the data are not strictly comparable.

In spite of these limitations I would argue that the data indicate conclusively that grades in Military Science and 300 level P.E. belong in a different population of grades than the general population of grades at Knox. It is also not too much to say that some students have lied out of their general grade points, grade average requirements at Knox on the basis of work taken in Military Science and/or P.E.;
might be cited as particularly offensive cases.

To be sure we are now restricting 300 level P.E. enrollment in the case where a student is not working toward a teaching certificate. I see no reason why we might not also insist that the grading of these courses should be on a pass-fail basis.

I would also advocate that all Military Science enrollments should be on a pass-fail basis. If such action is taken, I believe that such enrollments should in no way restrict a students right to enroll on a pass-fail basis in other courses.

George L. Melville

November, 1968

APPENDIX XII

AVERAGE ACADEMIC PERFORMANCE OF STUDENTS ENROLLED IN ADVANCED MILITARY SCIENCE AND 300 LEVEL PHYSICAL EDUCATION, SEPTEMBER, 1965, TO JUNE, 1968 COMPARED WITH THEIR AVERAGE ACADEMIC RECORD IN OTHER COURSES TAKEN DURING THEIR ENTIRE CAREER AT KNOX COLLEGE*

Student	Number Courses M.S.	Number Courses P.E.	Grade Index M.S. + P.E.	Grade Index Other Courses*	Cumulative Grade Index
	2.7		3.41	2.40	2.48
	3.0		2.83	2.12	2.18
	1.5		3.67	2.21	2.30
	.6		3.00	2.43	2.44
	1.5		4.00	2.35	2.41
	3.0		3.50	2.25	2.36
	1.5		3.33	2.40	2.45
		3.6	3.58	2.22	2.33
		2.5	4.00	1.80	1.90
	1.5		4.00	3.09	3.13
	1.2		2.50	2.13	2.14
		.5	4.00	2.15	2.18
	1.5	3.0	3.33	1.33	2.19
	1.5		3.67	3.69	3.69
	.6		4.00	1.55	1.75
	2.7		3.78	2.30	2.42
	2.2		1.73	1.52	1.47
	4.5	2.5	3.21	1.73	2.31
	2.7		3.41	2.82	2.87
		.6	4.00	1.80	1.84
	2.5		3.40	2.19	2.35
	1.5		4.00	2.51	2.60
		.6	4.00	2.61	2.69
		.5	4.00	1.96	2.00
		.5	4.00	2.95	2.97
	3.0		3.67	2.30	2.48
		2.1	2.29	1.99	2.01
	3.0		4.00	2.75	2.86
		1.5	4.00	2.81	2.87
		1.0	3.50	2.37	2.40
	2.7		3.41	1.40	1.58
		1.5	3.67	2.21	2.29
	4.2		3.62	2.46	2.61
	2.2		3.27	2.38	2.53
	1.2		3.50	3.04	3.05
	3.0		3.50	2.08	2.21
	3.0		4.00	2.58	2.67
		.6	4.00	1.72	1.75
	3.2		2.85	2.30	2.35
		1.0	4.00	2.24	2.34
	2.7		3.00	2.26	2.31
	3.0	3.9	3.86	1.88	2.24

1.5		3.00	1.90	1.96
.6		4.00	1.47	1.56
3.0		3.00	1.88	1.97
2.7		3.56	2.00	2.13
2.7		3.82	2.28	2.40
4.2		3.74	2.92	3.01
4.2		3.72	2.96	3.06
1.2		4.00	2.21	2.27
1.5		3.33	2.10	2.16
1.5		4.00	2.38	2.47
1.5		4.00	2.62	2.70
1.2		4.00	2.68	2.72
1.2		2.00	1.61	1.63
1.2		3.50	2.03	2.08
1.5		4.00	2.20	2.31
	.5	3.00	2.48	2.49
	.6	4.00	2.37	2.39
3.0	1.0	3.88	2.22	2.41
3.0		3.00	1.96	2.05
1.2		3.50	2.64	2.76
1.5	3.0	3.44	1.54	2.03
.6		3.00	2.81	2.81
1.2		4.00	3.23	3.25
	2.7	2.67	2.15	2.18
4.2		2.98	1.90	2.03
2.7		3.04	2.02	2.10
.5	1.0	3.00	.50	1.57
3.0		3.50	2.55	2.63
1.5		2.67	1.56	1.62
4.2		3.62	3.11	3.13
	.5	4.00	2.60	2.65
	1.0	4.00	1.93	1.99
3.0		3.83	1.99	2.14
3.6		3.59	2.45	2.58
1.5		2.00	2.44	2.49
3.0		3.67	2.26	2.41
	.5	4.00	1.89	1.95
3.0		2.67	2.01	2.06
1.2		2.50	2.01	2.02
.6		3.00	2.45	2.46
1.2		4.00	2.24	2.29
	1.5	2.60	1.71	1.76
1.5		3.00	1.62	1.68
	.5	3.00	2.12	2.13
	1.0	4.00	1.93	1.99
1.5		3.67	2.20	2.29
1.2		3.00	2.17	2.20
3.0		3.33	2.55	2.61
	1.0	3.00	2.01	2.05
	.9	4.00	2.81	2.84
	.9	3.00	2.50	2.55
1.2		4.00	3.25	3.28

	2.9	3.34	1.71	2.19
	2.0	4.00	1.67	2.25
	.5	4.00	2.14	2.19
	1.2	3.00	2.29	2.31
	1.0	4.00	1.85	1.91
4.2		3.51	2.59	2.65
3.0		3.00	2.88	2.89
3.0		3.50	2.39	2.49
.9	.6	3.50	1.83	1.92
	1.0	4.00	2.12	2.22
1.7		2.65	2.78	2.78
1.5		4.00	2.36	2.45
1.5		4.00	3.76	3.77
	.9	4.00	1.90	2.04
4.2		3.27	1.96	2.13
	1.8	4.00	2.77	2.83
3.0		2.83	2.62	2.65
1.5		3.33	2.02	2.09
2.7		4.00	2.90	2.99
3.0	4.0	3.29	1.67	2.38
	3.6	3.28	1.97	2.10

Source: Office of Institutional Research
November, 1968

* "Other Courses" in some cases would include Military Science and 300 Level Physical Education taken before September, 1965.

APPENDIX XIII WEIGHTING OF HIGH SCHOOL CLASS RANKS

Jan-1969

WT.	HIGH SCHOOL NAME	STREET ADDRESS	TOWN	S
0.3	VERDE VALLEY SCHOOL		SEDONA	A
2.0	FENSTER RANCH SCHOOL	3300 E BLACKRIDGE DR	TUCSON	A
0.5	THE CATE SCHOOL	CASITAS ROAD	CARPINTERIA	C
2.0	MARIN CATHOLIC H S	675 SR FR DRAKE BLVD	KENTFIELD	C
2.0	CHERRY CREEK H S	4801 SOUTH BOSTON	ENGLEWOOD	C
0.5	KENT SCHOOL	3401 S UNIVERSITY	ENGLEWOOD	C
3.0	LITTLETON HIGH SCH	199 E LITTLETON BLVD	LITTLETON	C
2.0	CENTENNIAL HIGH SCH	11TH & COURT STREETS	PUEBLO	C
2.5	DANBURY HIGH SCHOOL	CLAPBOARD-RIDGE RD	DANBURY	C
0.5	WOOSTER SCHOOL	RIDGEBURY ROAD	DANBURY	C
2.0	GLASTONBURY HIGH SCH	HUBBARD STREET	GLASTONBURY	C
0.5	GREENWICH ACADEMY	116 MAPLE AVE	GREENWICH	C
1.5	SENIOR HIGH	155 SOUTH AVENUE	NEW CANAAN	C
2.5	POMFRET SCHOOL		POMFRET	C
3.0	E O SMITH H S U-CONN		STORRS	C
0.5	FRIENDS SCHOOL	101 SCHOOL RD ALAPCS	WILMINGTON	D
0.5	T ROOSEVELT H S	4301 13TH ST N W	WASHINGTON	D
1.5	SEACREST HIGH SCHOOL	2501 N SEACREST BLVD	DELRAY BCH	F
1.5	FORT MYERS SR H S	2635 CORTEZ BLVD	FORT MYERS	F

1.5	JUPITER HIGH SCHOOL		JUPITER	F
2.0	LARGO SR HIGH SCH	410 NO SEMINOLE RD	LARGO	F
1.5	MIAMI SR HIGH SCHOOL	2450 S W FIRST ST	MIAMI	F
3.0	LUCY LANEY HIGH SCH	1339 GWINNETT ST	AUGUSTA	G
3.0	MAGNOLIA HIGH SCHOOL	BOX1018	THOMASVILLE	G
3.0	MAUI HIGH SCHOOL		HAMAKUAPOKO	H
2.0	SENIOR HIGH SCHOOL	WEST SNYDER STREET	ABINGDON	IL
3.0	ROOSEVELT MILIT ACAD		ALEDO	IL
3.0	ALTON SR HIGH SCHOOL	2200 COLLEGE AVE	ALTON	IL
3.0	COMMUNITY HIGH SCHOOL	63RD ST & 74TH AVE	ARGO	IL
1.5	ARLINGTON H S	502 WEST EUCLID AVE	ARLINGTON HTS	IL
2.0	FOREST VIEW HIGH SCH	2121 S GOEBBERT RD	ARLINGTON HTS	IL
2.0	ARTHUR HIGH SCHOOL		ARTHUR	IL
3.0	ASHLAND HIGH SCHOOL		ASHLAND	IL
3.0	COMMUNITY HIGH SCHOOL		ATHENS	IL
3.0	EAST H S OF AURORA	779 FIFTH AVE	AURORA	IL
1.5	WEST SENIOR HIGH SCHOOL	1201 W NEW YORK ST	AURORA	IL
3.0	BARRINGTON CONS H S	616 W MAIN ST	BARRINGTON	IL
2.0	BATAVIA SENIOR H S	WEST MAIN ST	BATAVIA	IL

3.0	BEARDSTOWN JR-SR H S	200 EAST 15TH ST	BEARDSTOWN	I
3.0	BEECHER HIGH SCHOOL		BEECHER	I
3.0	ALTHOFF CATHOLIC H S	5401 WEST MAIN ST	BELLEVILLE	I
3.0	TOWNSHIP HIGH SCHOOL	WEST MAIN ST	BELLEVILLE	I
3.0	BELVIDERE H S	1500 EAST 2ND ST	BELVIDERE	I
3.0	FENTON HIGH SCHOOL	1000 WEST GREEN ST	BENSENVILLE	I
2.5	J S MORTON H S WEST	2400 S HOME AVE	BERWYN	I
1.5	D D EISENHOWER HS 1	12700 SACRAMENTO AVE	BLUE ISLAND	I
2.0	BSHNL PRAIRIE CTY H S		BUSHNELL	I
2.0	CAIRO SENIOR H S		CAIRO	I
1.5	CENTRAL HIGH SCHOOL		CAMP POINT	I
2.0	SENIOR HIGH SCHOOL	1001 N MAIN STREET	CANTON	I
3.0	DUNDEE COMM HIGH SCH	CLEVELAND AVENUE	CARPENTRSVL	I
5.0	CRANE HIGH SCHOOL	2245 W JACKSON BLVD	CHICAGO	I
5.0	DU SABLE HIGH SCHOOL	4934 S WABASH AVE	CHICAGO	I
2.0	EMIL G HIRSCH H S	7740 S INGLESIDE AVE	CHICAGO	I
3.0	ENGLEWOOD HIGH SCH	6201 S STEWART AVE	CHICAGO	I
3.0	FARRAGUT HIGH SCHOOL	2345 S CHRISTIANA AV	CHICAGO	I
3.0	GOOD COUNSEL H S	3800 PETERSON AVENUE	CHICAGO	I
2.0	HARVARD-ST GEORGE SC	4731 SOUTH ELLIS AVE	CHICAGO	I

2.0	JAMES H BOWEN H S	2710 EAST 89 STREET	CHICAGO	IL
2.0	J M HARLAN HIGH SCH	9652 S MICHIGAN AVE	CHICAGO	IL
4.0	LINDBLOM HIGH SCHOOL	6130 S WOLCOTT ST	CHICAGO	IL
2.0	LUTHER HIGH SCHOOL N	5700 W BERTEAU ST	CHICAGO	IL
3.0	MARIST HIGH SCHOOL	4200 WEST 115TH ST	CHICAGO	IL
1.5	MORGAN PARK ACADEMY	2153 WEST 111 STREET	CHICAGO	IL
2.0	CATHEDRAL H S	751 NORTH STATE ST	CHICAGO	IL
2.0	NORTH PARK COLL AVAD	3225 FOSTER AVENUE	CHICAGO	IL
4.0	PARKER SENIOR H S	6800 S STEWART AVE	CHICAGO	IL
4.0	ROOSEVELT SENIOR H S	3436 W WILSON AVENUE	CHICAGO	IL
0.5	SULLIVAN SENIOR H S	6631 N BOSWORTH AVE	CHICAGO	IL
2.5	THOMAS KELLY H S	4136 S CALIF AVENUE	CHICAGO	IL
0.6	VON STEUBEN HIGH SCH	5039 N KIMBALL AVE	CHICAGO	IL
4.0	WELLS HIGH SCHOOL	936 N ASHLAND AVE	CHICAGO	IL
2.0	WENDELL PHILLIPS H S	244 E PERSHING RD	CHICAGO	IL
0.5	W H TAFT HIGH SCHOOL	5625 N NATOMA AVE	CHICAGO	IL
1.5	WILLIAM J BOGAN H S	3939 WEST 79TH ST	CHICAGO	IL
0.6	BLOOM TOWNSHIP H S	10TH & DIXIE HIGHWAY	CHICAGO HTS	IL
0.5	J S MORGAN H S EAST	2423 AUSTIN BLVD	CICERO	IL
2.0	TOWNSHIP HIGH SCHOOL		COAL CITY	IL

3.0	COLCHESTER H S		COLCHESTER	IL
3.0	CUBA HIGH SCHOOL		CUBA	IL
1.5	STEPHEN DECATUR H S	EN & N FRANKLIN STS	DECATUR	IL
0.6	EISENHOWER HIGH SCH	1200 SOUTH 16TH ST	DECATUR	IL
0.6	MACARTHUR HIGH SCH	1155 NORTH FAIRVIEW	DECATUR	IL
1.5	DEERFIELD H S	WAUKEGAN RD	DEERFIELD	IL
1.5	MAINE TOWNSHIP H S W	1755 SOUTH WOLF ROAD	DES PLAINES	IL
2.0	THORNRIDGE H S	SIBLEY & COTTAGE GRV	DOLTON	IL
1.5	SENIOR HIGH SCHOOL	4901 STATE STREET	E ST LOUIS	IL
3.0	ST EDWARD HIGH SCH	LOCUST & ELM STS	ELGIN	IL
1.2	ELGIN HIGH SCHOOL	360 DUPAGE ST	ELGIN	IL
1.2	LARKIN HIGH SCHOOL	1475 LARKIN AVENUE	ELGIN	IL
2.0	YORK COMMUNITY H S	355 W ST CHARLES RD	ELMHURST	IL
1.5	EVANSTON TOWNSHIP HS	1600 DODGE AVENUE	EVANSTON	IL
0.3	EVERGREEN PK COM H S	99TH ST & KEDZIE AVE	EVERGREEN PK	IL
1.5	VALLEY SENIOR H S		FAIRVIEW	IL
2.0	SENIOR HIGH SCHOOL	W MOSELEY STREET	FREEPORT	IL
2.0	COSTA HIGH SCHOOL	2726 COSTA DRIVE	GALESBURG	IL
1.5	SENIOR HIGH SCHOOL	1135 WEST FREMONT ST	GALESBURG	IL
2.0	GREENVIEW H S		GREENVIEW	IL

0.5	WARREN TOWNSHIP H S	500 OPLAINE ROAD	GURNEE	IL
2.0	HAMILTON HIGH SCHOOL		HAMILTON	IL
2.0	THORNTON TWP H S	151ST AND BROADWAY	HARVEY	IL
2.0	COMMUNITY HIGH SCH	SOUTH MCKINLEY ST	HAVANA	IL
2.0	PROVISO WEST HIGH S	WOLF RD & HARRISON	HILLSIDE	IL
0.8	TOWNSHIP HIGH SCHOOL	55TH & GRANT STREETS	HINSDALE	IL
0.8	JACKSONVILLE HIGH S	500 WEST STATE ST	JACKSONVILLE	IL
3.0	JOLIET TWP H S WEST	LARKIN & GLENWOOD	JOLIET	IL
2.0	JOLIET TWP H S CENTR	201 E JEFFERSON ST	JOLIET	IL
1.5	WESTMER HIGH SCHOOL		JOY	IL
2.0	EASTRIDGE HIGH SCH	2250 CRESTWOOD	KANKAKEE	IL
2.0	BISHOP MCNAMARA HS	BROOKMONT & ENTRANCE	KANKAKEE	IL
1.5	SENIOR HIGH SCHOOL	1200 EAST RHIRD ST	KEWANEE	IL
2.0	WETHERSFIELD TWP H S	439 WILLARD STREET	KEWANEE	IL
2.0	SENIOR HIGH SCHOOL		KNOXVILLE	IL
2.0	LAKE FOREST H S	1285 MCKINLEY ROAD	LAKE FOREST	IL
0.5	LAKE ZURICH HIGH SCH	CHURCH STREET	LAKE ZURICH	IL
1.5	THORNTON FRACT HS SO	BURNHAM AVE & 186TH	LANSING	IL
3.0	CARMEL H S FOR BOYS	P O BOX 668	MUNDELEIN	IL
2.0	BENET ACADEMY	2200 MAPLE AVENUE	LISLE	IL

.0	YORKWOOD COMMUNITY H		LITTLE YORK	IL
.0	LOCKPORT CENTRAL H S	12TH & JEFFERSON	LOCKPORT	IL
.0	GLENBARD EAST HIGH S	S MAIN & WILSON AVE	LOMBARD	IL
.0	MANLIUS HIGH SCHOOL		MANLIUS	IL
.0	KANELAND HIGH SCHOOL	ROUTE 2	MAPLE PARK	IL
.0	MARENGO HIGH SCHOOL		MARENGO	IL
.0	TOWNSHIP HIGH SCHOOL	BOX 68	MARISSA	IL
3.0	MARSEILLES H S		MARSEILLES	IL
3.0	LAKE PARK HIGH SCH	6N600 MEDINAH ROAD	ROSELLE	IL
2.0	MENDOTA HIGH SCHOOL		MENDOTA	IL
2.0	YOUNG AMERICA H S		METCALF	IL
3.0	MONTICELLO H S	S STATE & E WILLIAMS	MONTICELLO	IL
1.5	MOWEAQUA HIGH SCHOOL		MOWEAQUA	IL
0.5	LA SALLE PERU TWP HS	541 CHARTRES STREET	LA SALLE	IL
2.0	TOWNSHIP HIGH SCHOOL		NEPONSET	IL
1.5	NORMAL COMMUNITY H S	KINGSLY & SUDDUTH RD	NORMAL	IL
2.0	OAK PK & R FOREST HS	E AVE & ONTARIO ST	OAK PARK	IL
2.0	OREGON HIGH SCHOOL		OREGON	IL
2 0	CARL SANDBURG H S	133 ST & LAGRANGE RD	ORLAND PARK	IL
2.0	OTTAWA TOWNSHIP H S	P O BOX 338	OTTAWA	IL

0.6	RICH TWP H S	SAUK TRL. WESTWOOD DR	PARK FOREST	IL
2.0	MAINE TWP H S SOUTH	1111 SOUTH DEE ROAD	PARK RIDGE	IL
2.0	PAXTON HIGH SCHOOL	EAST CENTER STREET	PAXTON	IL
3.0	COMMUNITY HIGH SCH	207 N NINTH STREET	PEKIN	IL
0.6	RICHWOODS COMM H S	6301 N UNIVERSITY ST	PEORIA	IL
0.6	PLAINFIELD HS		PLAINFIELD	IL
2.0	ADLAIE STEVENSON HS	RT 22	PRAIRIE VW	IL
3.0	PRINCETON HIGH SCH	103 SOUTH EUCLID AVE	PRINCETON	IL
2.0	HOLY CROSS HIGH SCH	3000 NORTH 80TH AVE	RIVER GROVE	IL
0.6	RIVERSIDE BROOKFIELD HS		RIVERSIDE	IL
4.0	AUBURN SENIOR H S	5110 AUBURN STREET	ROCKFORD	IL
3.0	EAST SENIOR H S	2900 CHARLES STREET	ROCKFORD	IL
2.0	GUILFORD SENIOR H S	6120 SPRING CREEK RD	ROCKFORD	IL
3.0	HARLEM HIGH SCHOOL	735 WINDSOR ROAD	ROCKFORD	IL
2.0	SENIOR HIGH SCHOOL	1400 25TH AVENUE	ROCK ISLAND	IL
3.0	ST. CHARLES HIGH SCH	705 WEST MAIN STREET	ST. CHARLES	IL
2.0	SAVANNA HIGH SCHOOL		SAVANNA	IL
0.6	NILES TWP HIGH SCH E	NILES AVE & LINCOLN	SKOKIE	IL
0.6	NILES TWP HIGH SCH W	OAKTON & EDENS HY	SKOKIE	IL
2.0	STILLMAN VALLEY H S		STILLMAN VY	IL

2.0	STREATOR TWP HIGH SC	609 N JEFFERSON ST	STREATOR	I
2.0	V I T CONS HIGH SCH		TABLE GROVE	I
1.5	TINLEY PARK HIGH SCH	6111 WEST 175TH ST	TINLEY PARK	I
2.0	TREMONT HIGH SCHOOL		TREMONT	I
0.5	UNIVERSITY HIGH SCH	1212 SPRINGFIELD ST	URBANA	I
1.5	WALNUT HIGH SCHOOL		WALNUT	I
3.0	WARREN HIGH SCHOOL		WARREN	I
3.0	FRANKFORT HIGH S		W FRANKFORT	I
1.5	LOYOLA ACADEMY	1100 NORTH LARAMIE	WILMETTE	I
3.0	WYOMING HIGH SCHOOL		WYOMING	IL
0.5	CROWN POINT HS	WEST JOLIET STREET	CROWN POINT	IN
1.5	CULVER MILITARY ACAD		CULVER	IN
3.5	HOWE MILITARY SCHOOL		HOWE	IN
4.0	CRISPUS ATTUCKS H S	1140 NORTH WEST ST	INDIANAPOLIS	IN
1.5	PARK SCHOOL	3050 COLD SPRING RD	INDIANAPOLIS	IN
0.6	ISAAC C ELSTON H S	LAFAYETTE & DETROIT	MICHIGAN CITY	IN
1.5	MOUNT ST FRANCIS SEM		MOUNT ST FRANCIS	IN
0.6	W LAFAYETTE H S	LESLIE AVENUE	W LAFAYETTE	IN
.0	IOWA CITY SR HIGH SCHOOL	240 MORNINGSIDE DR	IOWA CITY	IA
.5	UNIVERSITY HIGH SCHOOL	CAPITOL STREET	IOWA CITY	IA

3.0	SENIOR HIGH SCHOOL	2285 MIDDLE ROAD	KEOKUK	IA
3.0	AMANA TWP HIGH SCHOOL		MIDDLE	IA
2.5	SENIOR HIGH SCHOOL	501 EAST SECOND ST	OTTUMWA	IA
3.0	SENIOR HIGH SCHOOL		RED OAK	IA
0.5	WYANDOTTE HIGH SCHOOL	25TH ST & MINNESOTA	KANSAS CITY	KS
0.5	SHAWNEE MISSION N H S	7401 JOHNSON DRIVE	SHAWNEE MISSION	KS
0.5	SHAWNEE MISSION E H S	7500 MISSION ROAD	SHAWNEE MISSION	KS
1.5	WICHITA HIGH SCHOOL E	DOUGLAS AVE & GROVE	WICHITA	KS
1.5	WINFIELD HIGH SCHOOL	EAST NINTH STREET	WINFIELD	KS
0.5	WELLS HIGH SCHOOL		WELLS	ME
1.5	ROLAND PARK CO SCH	817 W UNIV PARKWAY	BALTIMORE	MD
0.6	WALT WHITMAN H S	WHITTIER BLVD	BETHESDA	MD
0.5	NORTH DORCHESTER H S	RFD 2	HURLOCK	MD
0.5	ST TIMOTHYS SCHOOL		STEVENSON	MD
0.8	PHILLIPPS ACADEMY	MAIN STREET	ANDOVER	MA
1.3	DEERFIELD ACADEMY		DEERFIELD	MA
.5	NORTHFIELD SCHOOL		EAST NORTHFIELD	MA
0.5	GROTON HIGH SCHOOL		GROTON	MA
.5	LENOX SCHOOL	KEMBLE STREET	LENOX	MA
.0	WINDSOR MOUNTAIN SCHOOL		LENOX	MA

.5	TABOR ACADEMY	FRONT STREET	MARION	MA
.5	MOUNT HERMON SCHOOL		MT HERMON	MA
.5	THE PINGREE SCHOOL		SO HAMILTON	MA
.5	ELIZABETH SETON H S	OAKLAND STREET	WELLESLY HILLS	MA
.0	DETROIT COUNTRY DAY	22305 W 13 MILE ROAD	BIRMINGHAM	MI
.0	SENIOR HIGH SCHOOL	WEST B STREET	IRON MOUNTAIN	MI
.0	CALEDONIA H S		CALEDONIA	MN
.0	GOLDEN VALLEY H S	4800 GLENWOOD AVE	MINNEAPOLIS	MN
.2	AFFTON SENIOR H S	8309 MCKENZIE ROAD	AFFTON	MO
.0	KEMPER MIL SCH & COL		BOONVILLE	MO
.5	PARKWAY SENIOR H S	WOODS MILL & LADUE	CHESTERFIELD	MO
.5	VILLA DUCHESNE	801 SOUTH SPOEDE RD	ST LOUIS	MO
.5	BARSTOW SCHOOL	11511 STATE LINE RD	KANSAS CITY	MO
.5	PEMBROKE CTRY DAY SCHOOL	51ST ST & WARD PKWY	KANSAS CITY	MO
.5	RAYTOWN SENIOR H S	60TH & BLUE RIDGE RD	RAYTOWN	MO
.5	CHRISTIAN BRO COL HS	6501 CLAYTON ROAD	ST LOUIS	MO
.5	HORTON WATKINS H S	1201 S WARSON ROAD	ST LOUIS	MO
.5	SOUTHWEST HIGH SCHOOL	3125 S KINGSHIGH WAY	ST LOUIS	MO
.0	TARKIO HIGH SCHOOL		TARKIO	MO
.5	SENIOR HIGH SCHOOL	7401 BALSON AVENUE	UNIVERSITY CITY	MO

0.6	GREAT FALLS H S	20TH ST & 2ND AVE S	GREAT FALLS	MT
0.3	PHILLIPS EXETER ACADEMY		EXETER	NH
0.8	LAWRENCEVILLE SCHOOL		LAWRENCEVILLE	NJ
1.5	BARLOW SCHOOL		AMENIA	NY
1.5	CROTON HARMON H S	OLD POST ROAD	CROTON	NY
2.0	EAST ROCKAWAY H S	OCEAN AVENUE	E ROCKAWAY	NY
3.0	HOOSAC SCHOOL		HOOSICK	NY
3.0	DELEHANTY HIGH SCHOOL	91 01 MERRICK BLVD	JAMAICA	NY
1.5	RUDOLF STEINER SCHOOL	15 EAST 79TH STREET	NEW YORK	NY
1.5	PELHAM MEMORIAL H S	COLONIAL AVENUE	PELHAM	NY
0.6	PAUL D SCHREIBER H S	CAMPUS DRIVE	PT WASHINGTON	NY
1.5	SCARBOROUGH SCHOOL		SCARBOROUGH	NY
0.5	SCARSDALE H S	BREWSTER ROAD	SCARSDALE	NY
3.0	W-CHILI CENTRAL SCHOOL		SCOTTSVILLE	NY
0.5	HACKLEY SCHOOL	293 BENEDICT AVENUE	TARRYTOWN	NY
.3	CINCINNATI COUNTRY DAY SCH	6905 GIVEN ROAD	CINCINNATI	OH
0.0	GRANVILLE H S	130 NORTH GRANGER ST	GRANVILLE	OH
3.0	BIXBY HIGH SCHOOL		BIXBY	OK
.0	BURNS FLAT H S		BURNS FLAT	OK
.0	PONCA CITY SENIOR H S	OVRBRK AVE & FIFTH	PONCA CITY	OK

.0	SHAWNEE SENIOR H S	HIGHLAND & UNION STS	SHAWNEE	OK
.5	NATHAN HALE HIGH SCHOOL	6960 EAST 21ST ST	TULSA	OK
.6	THOMAS A EDISON H S	2906 EAST 41ST ST	TULSA	OK
.5	MERCERSBURG ACADEMY		MERCERSBURG	PA
.5	SOLEBURY SCHOOL		NEW HOPE	PA
.8	CENTRAL HIGH SCHOOL	OGONTZ AND OLNEY AVE	PHILADELPHIA	PA
.8	FOX CHAPEL AREA H S	611 FIELD CLUB ROAD	PITTSBURGH	PA
.5	ST GEORGES SCHOOL	PURGATORY ROAD	NEWPORT	RI
.5	PORTSMOUTH PRIORY SCHOOL		PORTSMOUTH	RI
.5	MOSES BROWN SCHOOL	250 LLOYD AVENUE	PROVIDENCE	RI
.5	FATHER BERTRAND H S	1169 KERR AVENUE	MEMPHIS	TN
.5	P WHEATLEY SR H S	4900 MARKET STREET	HOUSTON	TX
.5	ALAMO HEIGHTS SR H S	6900 BROADWAY	SAN ANTONIO	TX
.6	HIGHLAND HIGH SCHOOL	2166 SOUTH 17 EAST	SALT LAKE CITY	UT
.5	XAVIER H S BOYS	1600 WEST PROSPECT A	APPLETON	WI
.5	WAYLAND ACADEMY		BEAVER DAM	WI
.5	GEORGE N TREMPER H S	8560 26TH AVENUE	KENOSHA	WI
.4	WEST SENIOR HIGH SCH	30 ASH STREET	MADISON	WI

APPENDIX XIV

STUDY HABITS IN THE THREE-THREE SYSTEM AT KNOX COLLEGE, 1969

Office of Institutional Research
Knox College
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STUDY HABITS IN THE THREE-THREE SYSTEM AT KNOX COLLEGE, 1969

Some ten years ago the Ballard-Melville analyses of study time by Knox College students[1] were undertaken to ascertain if the classification of study time by subject area or by residence was meaningful. The principal inferences from these studies were:

1. Under a system in which most students took five courses, the great majority of students sloughed at least one course in any given week. Most students in fact took at least one course with the expectation of obtaining a satisfactory grade with a minimum of effort.

2. The average student spent a little over forty per cent of his study time on one course in any given week.

3. Significant differences in study time were found for areas of study. Study time spent on courses in humanities and in social studies was relatively low.

4. Significant differences in study time were found for students in the various residences. Men in upperclass dormitories tended to study more than women or than men in freshman dormitories. These latter groups tended to study considerably more than men living in fraternity houses.

In sum the data seemed to indicate that under the semester system at Knox College students were taking too many courses and teachers were teaching too many courses. We seemed to have a number of weak courses each term, primarily fillers demanded by a four course load teaching requirement. One college response to these conclusions was to utilize grant funds to finance the summer employment of some faculty for the redesign of a few courses which were to be offered for four or five credits rather than three. Within a few years of these beginnings, each department had a few such courses; consequently the total number of courses taken during a student's college career was reduced. In 1966-67 the college moved to the three-three calendar.

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[1] Ballard, Rene N. and Melville, George L.: Study Habits in Three Representative Men's Residences at Knox College, 1959 and Study Habits of Knox College Women, 1960

The success of the three-three system at any college depends upon the willingness of the individual faculty member to revise his courses so as to demand of the student the learning of one semester in one quarter. In evaluating this system some considerations may be stated a priori. First, some improvement in the college community will result from the weeding out or strengthening of those courses formerly offered as fillers. While three-three will not transform a weak department, it will make the weakness more conspicuous, less rationalizable, and generally more intolerable. Second, some debasement of the college's program will occur because there will inevitably be some faculty present who will insist that learning is primarily a discontinuous function of time as opposed to the concentration of effort. These people will be slow to revise their courses because they do not believe that a student can absorb in one quarter the material formerly offered in one semester. Finally, three-three will have a better chance of success in those colleges which, like Knox, have a history of course restructuring; which have gone through some intermediate stages on the way to three-three.

What inferences can be made as to study habits in the three-three system at Knox College? We are now in our third year of this calendar and those faculty members who are going to adjust to the system have undoubtedly done so by now. The present study, which is comparable in approach to the analysis of study habits in the semester system, permits us some data based observations.

Procedure

Four groups of students were selected to provide the basic data on study time spent in each course taken. Group I consisted of women living on campus.

One floor of Whiting Hall, one floor of Williston Hall, and two suites in Post Hall provided this cross section of Knox women. Group II consisted of men living in two dormitories (Conger and Sellew). One fraternity house (TKE) provided the students for Group III. Men and women students living off campus comprised Group IV. Eight student assistants distributed Form A to the students in their residences over a four week period, collecting the data once each week. All reports returned to the Office of Institutional Research were completely anonymous. Information on total study time reported in a week and study time for individual courses in a week was punched into two card decks with appropriate codes for departments and student group. Mr. William Ripperger, Director of the Knox College Computer Center, programed the requested outputs of the data.

Such a study has basic limitations. Data collection depends upon the concientiousness of the student assistants and the willingness of their subjects to cooperate. Past experience indicates that reported study time is probably biased upward. Sometimes students do not study as long as they think they have studied. Of greater importance is the fact that in the voluntary system of data provision a week of low study time may not be reported. Finally, study time itself can never be equated to learning, and we sometimes find ourselves adding and averaging unlike quantities.

In spite of these limitations, I believe such a study is worthwhile. The students who did cooperate appear to have done so quite responsibly, often reporting study time in minutes or to the nearest quarter hour. While bias undoubtedly exists in total study reported, one may still draw valid comparisons as between different areas or different student groups. There is no

reason to believe that more bias exists in one area than another or in one group of students than another.

The comparison of two such studies done ten years apart, however, is another matter. There is immediately an identification problem, the bane of all statisticians. Suppose as much total study is reported under three-three as under the semester system. How do we know that this did not happen in spite of the three-three system? Might not this current population of students have studied half again as much under a semester system? How comparable is the current student population to the one of 1959?

So far as comparing data on total study for the two populations of Knox students is concerned the identification problem remains unsolved, and the comparison is spurious. While the entering profiles of the two populations might be comparable, the populations are in fact quite different. In 1959 about forty-one percent of the Knox student body came from communities of less than 10,000 people. The comparable figure today is twenty-eight percent. In 1959 the majority of students claimed to be socially motivated rather than academically motivated. While comparable data do not exist for the current class, the declining power of fraternities and sororities suggests that this situation has reversed. The effect of the war, general student unrest, marijuana, and drug usage are all variables which have not been measured. Such environmental changes as campus facilities, the pass-fail system and faculty influences add to the confusion. As in most studies involving long range comparisons, the identification problem is not only not

solved; it is not solvable.[2]

Internal comparisons of the data may be legitimate, however, if one is careful not to speculate on causal relationships. Thus one might find that the data on study time for the current class is more homogenous than was the case ten years ago without identifying the three-three system as the causal element.

This study, therefore, does not pretend to evaluate the three-three system as such. The data based observations promised above are inferences as to what is happening at Knox College and do not imply that the three-three system is responsible for what is happening.

Inferences from the 1968-69 Data

The average student for all groups for which data were collected studied 25.8 hours per week. This figure is less than one hour under the average total study reported ten years ago, a difference which is not statistically significant. As was noted above, whether this lack of difference reflects favorably or unfavorably on the three-three system cannot be ascertained.

If the total study at Knox College is approximately the same as ten years ago, the identification of students in high study groups or low study groups has changed. In the original study men in upperclass dormitories constituted the high study group while men in fraternity residences made up the low study

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[2]Of course one may always contrive indexes to weight particular variables, thus providing a semblance of comparison. Thus one might use a particular price index to weight the money income of parents as a variable. What one tends to forget in this process is that the index is in fact an average of a distribution of relatives which on a ten year span exhibits little or no central tendency. Furthermore, the weighting of this distribution of relatives and the method of averaging them to obtain the index are arbitrary and can be manipulated to fit one's presuppositions.

group. In the current study freshmen and upperclassmen live in mixed dorms. There is no significant difference between total study, study in favored courses, or study in individual courses for men living in dorms, women living in dorms and men living in fraternities. (Tables I, IV) Consider the following data obtained in 1958-59 and 1959-60.

Student Group	Percent Studying Less than 7½ Hours per Week
Men's Dorm	0
Women's Dorm	0.5
Fraternity	18.5

This term 3.9 percent of students living in dorms or fraternities studied less than seven and one-half hours per week. We have perhaps the same percentage of such students these days as in the past, but they are spread around in various groups rather than congregating in the fraternities as in the past.

Tables I and II indicate that students in off campus housing (not living at home) study significantly more than the other students at the college. This was to be expected since this group of students contains a large number of very good students. It should be pointed out, however, that a recent study clearly indicates that students moving from dormitories in their junior year to off campus housing in their senior years do not improve their grades more than other groups of seniors.[3] Apparently living off campus is not itself an influence on total study.

Table IV shows that study in individual courses is not significantly different for the four groups of students. An F test that study in individual courses is independent of student group cannot be rejected to an

[3]Harlan, Jerry: "Comparisons of Academic Improvement for Various Senior Groups Living Off Campus in Their Senior Year and for One Group of Students Living on Campus in Their Senior Year". 1969.

appropriate degree of significance, suggesting that if any difference exists it is slight.

The percentage of study time in any given week which students put into one course continues to be high, indeed, at fifty-three percent it is substantially higher for the current class than was found in the earlier study. However, this is not as great a problem when the remaining time is to be spread over two courses as was the case when the remaining time was to be spread over four courses. As was suggested a priori, the percentage of courses for which zero study was reported fell significantly. Only 5.3 percent of the reports on classes showed zero study, as opposed to 9.4 percent in the 1959-60 study. Table VI provides a very high value for the chi square test of independence, concluding that the percentage of zero hours studied in a given week is significantly lower than nine years ago. In crediting the three-three system with this change we really are doing nothing more than accepting the a priori generalization with which we began. Had the data appeared opposed to this generalization it would have been an indication that the quality of the student body had declined.

Since total study has not declined under the current system and since the percentage of courses not studied at all in a given week has substantially declined, the average study per week per course has increased. Table VII shows the breakdown of the data by area of study for the various student groups. An F test of independence shows that the differences in study for the various areas of study is significant. Perhaps the greatest differences between the five areas of study lies in the variance of study rather than

the average study. Thus the dispersion in study for languages, math and sciences, is low relative to the other areas.[4] The variation in study in education is quite high due to the difference in work demanded in student teaching and work demanded in other education courses (including 300 level Physical Education).

The current distribution of study in Education courses per se exhibits considerable positive skewness with a mean of ten and a median of four. The corresponding figures for 1959-60 were six and five. Thus while mean study has increased median study has declined. Neither difference is significant to the .05 level, though the difference in means is close. ($t = 1.88$)

If one views the arrays of study time for the various departments and contrasts them with the corresponding data from the earlier studies, it is apparent that the greatest increases in study have come in the areas in which this was most needed: Social Studies and Humanities. Ten years ago the departments of History, Political Science and Sociology had medians of 5.00, 5.25 and 3.50 respectively. In the current data the corresponding values are 8.00, 8.50 and 6.00.[5]

Looking at the Humanities the median study for Art students increased from 1.50 hours per week per course to 6.75 hours. This dramatic change is accentuated by the fact that in its new facilities the department draws many

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[4]The variance for math and science study for off-campus students was higher than the mean study. This probably indicates the heterogeneity of this student group.

[5]On the other hand, the median study time reported in Economics and Business Administration fell from 7.25 to 6.50. This difference, while not statistically significant, is none the less disappointing when one is looking for a movement in the other direction. An examination of the reports for individual courses indicates that the array of reports in this department is biased downward by study in the basic principles courses in Economics (Econ 201-202). The median study reported for these two courses is 5.00 hours. One is inclined to wonder if such courses have in fact been revised to cover one semester's material in one quarter.

more students than was the case ten years ago. The median study in Music has increased one hundred percent over the past ten years. Average study in Philosophy has increased substantially.

Increases in study were also reported by women in some of the science fields. The current medians: Chemistry = 12.00; Physics = 6.75; Biology = 6.00.

On the other side of the picture the following departments had a median study reported of four hours or less per week per course: Education, Geology, Military Science,[6] 300 level Physical Education and Religion. Of these only Geology and Religion do not give abnormally high grades. It should be remembered, however, that the size of some of these samples is small and might be biased downward by the performance of a few students taking a distribution requirement on a pass-fail basis.

Conclusions

The above analysis of students study habits has neglected to review the terrific amount of work done by a number of students in most fields. I have analyzed for the present class particularly those aspects of weakness which the college displayed ten years ago. This is as it should be since the purpose of such research is not to seek out happy information, but to promote internal development by identifying weakness.

It is nonetheless of considerably happy import that the current data reveal the diminution or disappearance of the principal weaknesses cited in the 1958-59 and 1959-60 studies. The tremendous anti-intellectual influence of the fraternities appears to have been broken. There are fewer weak

[6] All Military Science courses are one-half credit, but doubling the median in this field would leave it below four hours.

courses, and there are fewer weak departments. That this has been accomplished in a period of growth (the student body is now 64% larger) and experimentation (the three-three system, the admissions with reservations program, the pass-fail system, the group interest program) is heartening. Perhaps this is a principal justification of the conservative way in which the college has grown and of the attitude of review we have shown toward our experiments in education. We have not allowed the financial need for a higher rate of growth to undermine our admissions program, and we have modified our experimental programs to eliminate observed weaknesses.[7]

We still have some weaknesses as measured by students' study time. Perhaps a college administration and faculty should feel fortunate if a report reveals that less than four percent of its students are studying under seven and one-half hours per week. I do not feel so. I believe it due to a continuing weakness in some areas and to the refusal of some faculty to adjust to the three-three system; to their considered refusal to compete for one-third of the students' time.

Some progress is being made in these areas of weakness. The college has moved to restrict the number of courses which may be taken for credit in Men's Physical Education to one course, excepting the students working for a teaching certificate. The question of granting credit or the accounting

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[7]An exception to this posture may be taken in our effective granting of credit for comprehensive examinations. A preliminary study has shown that little correlation exists between the grades made by Economics majors on comprehensives and their grades in the courses required in the department. It is my opinion that if the current study had been done in the spring term it would have shown precious little work done to prepare for the comprehensives. If so, the reduction of courses required for graduation from thirty-six to thirty-five on the basis of work done toward the comprehensive is purely and simply a debasement of the college's graduation requirements.

of grades in Military Science is currently under consideration. The three-three system itself will undoubtedly receive extensive review in the next few years. Our willingness to recognize and face existing problems of education is one of the principal justifications of our posture as an advancing, first rate institution.

George L. Melville

March, 1969

TABLE I

TOTAL STUDY PER WEEK AND STUDY IN FAVORED SUBJECT PER WEEK
528 REPORTS CLASSIFIED BY STUDENT GROUP, WINTER TERM
AT KNOX COLLEGE, 1968-69

Student Group	Total Study*				Study in One Subject*			Ratio of Study in One Subject to Total Study
	f	$\overline{X}$	S	V	$\overline{X}$	S	V	
I: Dorm Women	260	24.9	11.7	47	13.4	7.9	59.1	.54
II: Dorm Men	161	25.8	11.6	45	13.3	6.4	48.3	.52
III: Frat Men	72	26.4	11.3	43	14.1	8.0	57.0	.53
IV: Off Campus	35	31.5	11.3	36	17.2	9.6	53.9	.55

Source: Office of Institutional Research, March, 1969

* $\overline{X}$ Arithmetic Mean hours per student, per week
S Standard Deviation
V Coefficient of Variation: $(S/\overline{X})100$

TABLE II

ANALYSIS OF VARIANCE IN TABLE I*

Data Tested	F ratio
Total Study	3.39
Favored Course	2.74

Source: Office of Institutional Research, March, 1969

*These are tests of the homogeneity of the data obtained for the different groups of students. If the data are homogeneous F belongs to a distribution of values with a 95th percentile of 2.62. Since our F values are greater than 2.62 we must either conclude that the variations we have obtained are relatively rare random occurances or that the data are not homogeneous. The latter conclusion is the more reasonable. The stratification of the data by student group is meaningful both for total study and study in the favored course.

TABLE III

CUMULATIVE PERCENTAGE MORE THAN, LESS THAN* DISTRIBUTIONS OF TOTAL STUDY PER WEEK, CLASSIFIED BY GROUPS I-III COMBINED AND GROUP IV, 528 REPORTS, WINTER TERM, 1968-69

Hours of Total Study	Groups I-III		Group IV	
	More Than	Less Than	More Than	Less Than
0 and under 7½	100.0	3.9	100.0	0.0
7½ and under 15	96.1	18.1	100.0	2.9
15 and under 22½	81.9	43.9	97.1	22.9
22½ and under 30	56.1	68.6	77.1	48.6
30 and under 37½	31.4	85.3	51.4	74.3
37½ and under 45	14.7	93.8	25.7	85.7
45 and under 52	6.2	98.0	14.3	97.1
52 and under 75	2.0	100.0	2.9	100.0

Source: Office of Institutional Research, March, 1969

*Percent of students studying more than the lower class limit
Percent of students studying less than the upper class limit

TABLE IV

HOURS STUDIED PER COURSE PER WEEK CLASSIFIED BY STUDENT GROUP*, KNOX COLLEGE, WINTER TERM, 1968-69

Student Group	Number of Reports	Mean	Standard Deviation	Coefficient of Variation
I	786	8.0	6.8	85.0
II	161	7.8	6.1	79.1
III	221	8.2	6.9	83.9
IV	94	9.5	7.5	78.6

Source: Office of Institutional Research
March, 1969

*Analysis of Variance: F=1.96, not significant. Classification of hours studied in individual courses by student group is not meaningful.

TABLE V

CUMULATIVE PERCENTAGE MORE THAN, LESS THAN* DISTRIBUTION OF STUDY PER WEEK IN INDIVIDUAL COURSES, 1621 REPORTS FROM ALL GROUPS OF STUDENTS, WINTER TERM, 1968-69

Hours Studied	More Than	Less Than
0	100.0	5.3
.01 and under 4	94.7	27.4
4 and under 8	72.6	57.0
8 and under 12	43.0	78.8
12 and under 16	21.2	89.0
16 and under 20	11.0	94.2
20 and over	5.8	100.0

Source: Office of Institutional Research
March, 1969

*Percent more than the lower class limit
Percent less than the upper class limit

TABLE VI

CHI SQUARE ANALYSIS OF ZERO STUDY REPORTS
1959-60 and 1968-69

Year	Number 0 Hours Reported	Number of other Reports
1959-60	157 (123)	1512 (1546)
1968-69	86 (120)	1533 (1499)

Source: Office of Institutional Research
March, 1969

Chi square = 20, significantly higher than the 99th percentile value of 6.64. Therefore the number of zero hours studied in individual courses is significantly lower than nine years ago.

TABLE VII

MEAN HOURS OF STUDY PER COURSE CLASSIFIED BY STUDENT GROUP AND AREA OF STUDY*, 1621 REPORTS, WINTER TERM 1968-69

Area	Group I		Group II		Group III		Group IV	
	$\overline{X}$	S	$\overline{X}$	S	$\overline{X}$	S	$\overline{X}$	S
Humanities	7.9	6.6	7.7	5.8	9.0	8.0	10.4	6.8
Social Studies	9.2	8.3	8.4	7.0	8.6	6.7	9.4	8.5
Math & Science	7.5	5.7	7.3	5.3	8.6	6.9	7.1	8.5
Languages	6.9	4.1	8.0	5.2	5.5	3.6	8.9	2.0
Education	9.5	11.5	1.1	1.0	6.4	5.1	***	***

Source: Office of Institutional Research
March, 1969

*Analysis of Variance: F = 5.29, substantially higher than the 99th percentile. Thus the classification of these data by subject area is meaningful.

REFERENCE TABLES

ARRAYS OF STUDY FOR INDIVIDUAL DEPARTMENTS CLASSIFIED BY STUDENT GROUP

AMERICAN STUDIES

Group I Dorm Women	Group III Fraternity Men	Group IV Off Campus
14.56	5.50	12.00
11.00		10.00
7.00		8.00
		6.00

Number 8
Median 9.00

ART

Group I Dorm Women			Group II Dorm Men	Group III Fraternity Men	Group IV Off Campus
56.00	9.00	2.00	15.00	29.00	23.50
34.00	8.50	2.00	10.00	21.00	22.00
26.00	8.00	1.25	.00	11.00	19.00
23.00	7.50	1.25		10.50	15.00
22.50	7.00	1.00		6.00	14.00
15.50	6.50	1.00		5.00	13.50
14.50	6.50	1.00		3.00	12.00
14.50	6.00	1.00			11.50
14.00	5.50	1.00			11.00
14.00	5.50	1.00			9.00
12.00	5.00	.75			8.50
11.50	5.00	.50			5.00
11.50	4.50	.00			4.00
10.75	4.00	.00			3.75
10.00	3.00	.00			3.00
10.00	3.00	.00			3.00
10.00	3.00	.00			.00
10.00	2.50				

Number 80
Median 6.75

BIOLOGY

Group I Dorm Women		Group II Dorm Men	Group III Fraternity Men
25.50	5.00	17.50	27.50
16.00	5.00	13.00	20.00
10.50	5.00	11.00	19.50
10.00	5.00	10.00	13.00
9.50	4.50	8.00	13.00
9.00	4.00	6.50	11.00
9.00	4.00	6.50	9.50
9.00	4.00	6.00	9.00
9.00	4.00	5.50	8.75
8.50	3.50	5.50	6.00
8.50	3.50	5.25	6.00
8.00	3.00	4.50	2.00
8.00	3.00	4.00	
8.00	2.50	3.50	
7.50	1.00	2.50	
7.50	.00	2.00	
7.00	.00	1.75	
6.50	.00	.75	
6.00		.00	
6.00		.00	

Number 70
Median 6.00

CHEMISTRY

Group I Dorm Women	Group II Dorm Men	Group III Fraternity Men
22.00	24.00	10.00
20.00	23.00	7.50
19.00	17.50	7.00
18.00	16.00	5.00
16.00	12.50	
15.00	12.00	
13.00	9.00	
12.00	8.00	
12.00	6.00	
8.00	5.50	
5.50	5.00	
5.50	2.00	
3.50		
2.00		
.00		
.00		
.00		

Number 33
Median 9.00

COMPUTER SCIENCE

Group I Dorm Women	Group II Dorm Men	Group III Fraternity Men
22.00	1.75	18.00
21.50	.75	8.00
15.00	.50	8.00
13.00	.50	7.75
13.00		5.00
11.50		
10.50		
9.00		
8.50		
2.00		

Number 19

Median 8.50

ECONOMICS

Group I Dorm Women	Group II Dorm Men		Group III Fraternity Men		Group IV Off Campus
13.00	20.00	4.50	29.00	7.00	1.25
13.00	19.25	4.50	17.00	7.00	1.25
12.00	18.00	4.50	15.00	7.00	1.00
11.50	13.50	3.50	14.00	6.00	.50
11.00	12.00	3.50	13.00	6.00	
10.00	10.00	3.50	11.00	5.00	
10.00	9.00	3.25	11.00	5.00	
10.00	9.00	3.00	10.00	5.00	
9.00	8.00	3.00	10.00	5.00	
7.00	7.50	3.00	10.00	4.00	
7.00	7.00	2.00	8.00	3.50	
6.50	7.00	2.00	8.00	3.00	
5.00	6.00	1.50	8.00	2.00	
5.00	6.00	1.00	8.00	1.50	
4.00	5.00	1.00	8.00	1.00	
3.50	5.00		7.00		
3.00					
2.00					
2.00					

Number 85
Median 6.50

EDUCATION

Group I Dorm Women			Group III Fraternity Men
39.00	7.00	2.00	3.00
35.00	6.00	1.50	
27.00	6.00	1.00	
25.00	4.00	.25	
20.00	4.00	.00	
18.00	4.00	.00	
14.00	3.00	.00	
11.00			

Number 23
Median 4.00

ENGLISH

Group I Dorm Women			Group II Dorm Men		Group III Fraternity Men	Group IV Off Campus
29.00	10.00	6.00	36.50	7.75	20.50	37.00
25.00	10.00	6.00	19.50	7.50	20.00	14.50
24.00	9.50	6.00	19.50	7.00	16.00	13.00
24.00	9.50	6.00	18.50	7.00	13.50	13.00
20.00	9.50	6.00	18.00	6.50	9.00	12.50
20.00	9.50	5.50	17.00	6.50	6.00	12.00
19.50	9.00	5.25	16.50	6.00	5.00	12.00
19.50	9.00	5.00	16.25	6.00	4.00	11.00
18.50	8.75	5.00	14.00	5.50	3.00	10.50
17.50	8.50	5.00	14.00	5.00	3.00	9.00
16.00	8.25	5.00	13.50	4.50	2.50	7.00
15.75	7.50	4.75	13.25	4.00	2.50	6.50
15.50	7.50	4.75	12.75	3.00	2.50	6.00
15.00	7.25	4.50	12.50	2.75		6.00
14.75	7.25	4.50	12.00	2.50		4.00
14.00	7.00	4.50	11.50	2.50		3.50
13.25	7.00	4.50	11.00	2.00		
13.00	7.00	4.00	10.50	2.00		
13.00	7.00	3.50	10.00	2.00		
12.50	7.00	3.00	10.00	1.00		
12.25	7.00	3.00	9.00	1.00		
12.00	7.00	3.00	8.75	.50		
12.00	7.00	2.25	8.00	.00		
12.00	7.00	2.00	8.00	.00		
11.75	6.75	2.00				
11.50	6.50	2.00				
11.25	6.50	2.00				
11.00	6.50	2.00				
11.00	6.50	1.50				
10.75	6.25	1.25				
10.50	6.25	1.00				
10.25	6.25	1.00				
10.00	6.00	.00				
10.00	6.00	.00				
10.00						

Number 180

Median 7.25

FRENCH

Group I Dorm Women			Group II Dorm Men	Group III Fraternity Men	Group IV Off Campus
26.50	8.50	5.00	25.00	9.00	11.00
21.00	8.50	4.75	22.00	4.75	10.00
15.50	8.50	4.50	19.00	4.00	8.25
15.00	8.00	4.50	14.75	3.50	6.00
14.75	8.00	4.00	14.00	2.25	6.00
13.00	8.00	4.00	13.00	2.00	
13.00	8.00	4.00	11.00	1.75	
12.50	7.00	3.50	10.50	.00	
12.50	6.50	3.50	10.00		
12.00	6.50	3.50	9.00		
11.00	6.50	3.50	9.00		
11.00	6.50	3.33	8.75		
11.00	6.00	3.00	8.50		
10.50	6.00	3.00	8.50		
10.50	6.00	3.00	8.00		
10.50	6.00	2.20	7.00		
10.00	6.00	2.00	6.00		
10.00	5.75	2.00	6.00		
10.00	5.50	2.00	6.00		
10.00	5.50	2.00	5.50		
9.00	5.50	2.00	4.00		
9.00	5.25	1.00	4.00		
9.00	5.25	.00	2.50		
9.00	5.00	.00	2.50		
9.00			.00		

Number 111
Median 6.50

GEOLOGY

Group I Dorm Women		Group II Dorm Men	Group III Fraternity Men
21.00	3.00	5.50	24.50
16.25	2.75	2.50	8.75
12.50	2.00		2.50
10.75	2.00		2.00
10.00	2.00		.00
10.00	1.00		
9.00	.25		
6.00	.00		
6.00	.00		
4.00	.00		

Number 27
Median 2.75

GERMAN

Group I Dorm Women	Group II Dorm Men
20.50	27.00
10.50	14.25
10.00	11.00
6.50	10.75
6.00	9.25
6.00	9.00
6.00	7.00
5.50	6.75
5.00	6.75
4.25	5.75
4.00	4.75
4.00	4.75
	4.75

Number 25
Median 6.50

HISTORY

Group I Dorm Women			Group II Dorm Men			Group III Fraternity Men
67.00	13.00	6.00	31.00	10.25	4.50	34.50
44.00	13.00	6.00	28.50	10.25	4.50	26.00
34.50	13.00	5.50	27.00	10.00	4.25	16.00
33.00	12.50	5.50	24.75	9.50	4.00	15.75
30.00	12.00	5.00	21.00	9.00	4.00	13.50
29.00	12.00	4.50	20.75	9.00	3.75	13.00
28.50	11.50	4.00	19.50	8.50	3.50	12.00
28.25	11.00	4.00	18.25	8.50	3.00	10.00
20.50	11.00	4.00	17.75	8.50	3.00	7.00
20.00	11.00	4.00	17.50	8.00	3.00	7.00
19.50	10.00	4.00	17.00	8.00	3.00	6.50
19.00	9.50	4.00	16.50	8.00	2.50	6.00
19.00	8.75	3.75	16.00	7.50	2.50	5.50
19.00	8.50	3.00	14.75	7.50	2.00	4.00
18.00	8.50	2.50	14.50	7.50	2.00	4.00
17.50	8.00	2.00	14.00	7.00	1.75	3.50
17.50	8.00	2.00	13.50	7.00	1.00	3.00
17.00	7.75	2.00	13.50	6.50	1.00	2.00
16.00	7.00	1.75	13.00	6.00	.75	2.00
16.00	7.00	1.00	12.00	6.00	.50	2.00
15.50	7.00	1.00	11.50	5.75	.50	1.50
15.50	6.50	.00	11.50	5.75	.00	.00
14.00	6.50	.00	11.50	5.25	.00	
13.75	6.50	.00	11.50	5.00	.00	
13.50	6.00	.00	11.00	5.00	.00	
13.50	6.00		11.00			

Number 175
Median 8.00

HUMANITIES

Group I Dorm Women	Group II Dorm Men	Group III Fraternity Men
12.00	9.50	13.00
7.00	6.50	6.00
5.00	5.00	3.00
3.00	4.50	
3.00	3.75	
2.00	3.00	

Number 15
Median 5.00

MATHEMATICS

Group I Dorm Women			Group II Dorm Men		Group III Fraternity Men	Group IV Off Campus
29.00	8.25	4.00	23.50	7.75	7.00	22.00
21.00	8.00	4.00	23.00	7.50	6.00	1.50
15.50	8.00	4.00	21.00	7.50	6.00	1.00
15.00	8.00	3.50	20.50	7.25	5.00	
15.00	7.50	3.25	18.25	7.00	4.00	
13.50	6.75	3.00	17.50	6.50	2.50	
12.50	6.50	3.00	12.50	6.50	1.00	
12.25	6.50	3.00	11.50	6.25		
12.00	6.50	3.00	11.50	6.00		
12.00	6.00	2.75	11.00	6.00		
12.00	6.00	2.50	10.50	6.00		
11.00	6.00	2.00	9.50	5.50		
10.50	6.00	2.00	9.50	5.00		
10.00	6.00	1.50	9.50	5.00		
10.00	6.00	1.50	9.00	5.00		
10.00	5.50	1.20	9.00	5.00		
10.00	5.00	1.00	9.00	5.00		
10.00	5.00	.50	9.00	4.75		
9.50	4.75	.25	8.50	4.00		
9.50	4.50	.20	8.50	4.00		
9.00	4.25	.00	8.50	3.50		
9.00	4.00	.00	8.50	3.50		
8.50			8.00	3.00		
			8.00	3.00		
			8.00	2.00		
			7.75	.00		
			7.75			

Number 130
Median 6.50

MILITARY SCIENCE

Group I Dorm Men	Group II Fraternity Men
1.50	2.75
1.50	2.00
1.00	2.00
.50	2.00
.50	2.00
.00	.50
.00	.00

Number 12
Median 1.25

MUSIC

Group I Dorm Women		Group II Dorm Men		Group III Fraternity Men
18.00	6.50	16.50	4.50	12.50
17.00	6.00	14.00	4.50	12.00
16.00	6.00	12.50	4.00	8.50
15.00	5.75	12.25	4.00	8.00
12.00	5.50	10.50	3.75	6.00
11.50	5.50	10.00	3.50	6.00
11.50	5.00	9.50	3.25	6.00
11.00	5.00	8.50	3.00	5.50
10.50	4.67	8.00	3.00	5.00
10.50	4.00	7.00	3.00	5.00
10.00	3.75	7.00	3.00	5.00
10.00	3.50	7.00	1.00	5.00
9.50	2.75	7.00	.00	4.25
9.50	2.50	7.00		4.00
9.00	2.00			4.00
7.50	2.00			3.00
7.00	1.00			3.00
6.50	.50			3.00
6.50	.50			2.25
				2.00

Number 85
Median 6.00

PHILOSOPHY

Group I Dorm Women	Group II Dorm Men	Group III Fraternity Men	Group IV Off Campus
6.00	22.00	41.00	3.00
5.50	12.00	27.00	
4.00	10.25	16.00	
3.50	10.00	15.00	
2.00	9.50	13.00	
.00	9.00	4.50	
	8.50	2.00	
	8.50		
	6.00		
	2.50		
	2.00		
	.00		
	.00		

Number 27
Median 6.00

MEN'S PHYSICAL EDUCATION

Group II Dorm Men	Group III Fraternity Men
3.00	15.00
2.00	5.00
1.00	2.50
1.00	
.50	
.00	
.00	

Number 10
Median 1.50

PHYSICS

Group I Dorm Women	Group II Dorm Men		Group III Fraternity Men	Group IV Off Campus
21.00	18.00	5.00	21.00	23.00
15.00	16.00	5.00	19.50	8.00
12.75	12.00	4.50	12.00	2.50
11.00	12.00	4.00	11.00	2.25
11.00	11.00	4.00	4.00	2.25
10.00	9.25	3.50	3.50	1.00
8.25	9.00	3.50	1.00	
7.50	8.75	3.25	1.00	
6.75	8.50	3.00	.00	
5.50	7.00	2.50	.00	
5.00	6.75	2.50		
4.25	6.50	2.00		
4.00	6.25	1.50		
3.50	6.00	1.00		
3.00	6.00	.50		
1.50	5.75	.00		
.00	5.25	.00		
	5.25			

Number 68
Median 5.00

POLITICAL SCIENCE

Group I Dorm Women	Group II Dorm Men		Group III Fraternity Men	Group IV Off Campus	
29.50	36.25	5.50	35.00	45.00	9.50
19.00	26.00	5.00	19.50	29.00	9.00
19.00	25.00	5.00	18.00	22.00	8.75
18.50	21.00	4.00	14.50	16.50	7.50
18.00	20.00	4.00	14.50	16.00	7.00
13.50	17.25	3.00	13.50	14.50	6.25
13.00	17.00	3.00	12.00	14.00	5.00
11.50	16.00	3.00	10.50	14.00	4.00
10.50	16.00	3.00	9.00	14.00	3.50
10.00	15.00	2.00	9.00	13.50	3.00
9.50	13.75	1.00	8.50	12.00	3.00
9.00	13.00	1.00	8.00	11.00	2.50
8.50	10.00	.50	8.00	10.00	2.50
8.00	8.25	.00	7.50	10.00	2.00
7.75	7.67	.00	5.50	10.00	1.00
7.00	6.75	.00	5.00		
7.00	5.50	.00	5.00		
7.00			3.00		
5.50			2.00		
2.00			.00		
1.00					
1.00					
.25					

Number 107
Median 8.50

PSYCHOLOGY

Group I Dorm Women		Group II Dorm Men		Group III Fraternity Men	Group IV Off Campus
19.00	6.00	22.00	8.00	7.50	5.00
19.00	5.50	20.00	7.00	5.50	
18.00	4.00	14.50	7.00	5.00	
17.50	4.00	13.00	6.50	5.00	
16.50	3.75	12.50	5.00	5.00	
13.00	3.75	12.00	4.50	3.00	
10.75	3.50	10.75	3.50	3.00	
10.50	3.25	10.50	3.00		
10.50	3.00	10.00	3.00		
10.25	3.00	9.50	2.50		
10.00	3.00	9.00	1.50		
10.00	3.00	9.00	1.50		
10.00	3.00	8.50	1.00		
10.00	3.00	8.00	1.00		
9.00	3.00	8.00	.00		
9.00	2.50	8.00	.00		
9.00	2.00	8.00	.00		
8.50	1.50				
7.50	1.00				
7.00	.00				
7.00	.00				
6.00					

Number 85
Median 6.00

RELIGION

Group I Dorm Women		Group II Dorm Men
12.00	3.00	4.00
8.00	2.00	2.50
7.00	2.00	
6.00	1.50	
4.00	1.00	
3.50	.50	
3.50	.00	
3.50		

Number 17
Median 3.50

RUSSIAN

Group I Dorm Women		Group II Dorm Men	Group III Fraternity Men	Group IV Off Campus
12.50	7.00	10.50	15.00	11.75
12.00	7.00	9.00	10.25	11.00
11.00	6.50	8.00	4.00	8.00
10.50	6.00	8.00	3.00	8.00
9.50	5.25	7.50		
9.00	5.00	7.50		
9.00	5.00	7.50		
9.00	4.00	4.75		
8.00	4.00	4.00		
8.00	2.00	3.50		
7.50		3.00		
		2.50		
		2.00		
		1.00		

Number 43
Median 7.50

SOCIOLOGY

Group I Dorm Women		Group II Dorm Men	Group III Fraternity Men	Group IV Off Campus
22.50	4.50	24.00	23.00	11.50
20.00	4.50	24.00	20.00	7.50
18.00	4.25	23.50	18.00	5.00
16.00	4.00	16.50	17.25	
16.00	4.00	16.25	12.00	
15.00	4.00	15.00	11.50	
14.50	3.50	14.00	11.00	
14.50	3.00	12.33	10.50	
12.00	2.00	12.00	9.00	
12.00	2.00	11.00	8.00	
10.00	1.50	11.00	7.00	
9.25	1.00	10.00	6.00	
9.00	1.00	10.00	6.00	
7.50	.75	9.00	4.00	
7.00	.50	8.00	3.50	
7.00	.00	6.00	3.00	
6.00	.00	6.00	2.50	
6.00	.00	5.50	2.00	
6.00	.00	4.50	.00	
5.50	.00	4.00		
5.50	.00	3.50		
5.00	.00	2.00		
5.00		1.50		
		1.00		
		1.00		
		.00		
		.00		
		.00		

Number 95
Median 6.00

SPANISH

Group I Dorm Women		Group II Dorm Men	Group III Fraternity Men
17.00	5.00	19.50	10.00
13.50	5.00	12.50	8.00
10.50	4.50	11.00	6.50
9.00	4.50	10.00	5.75
8.50	4.00	9.00	5.50
8.50	4.00	8.75	4.00
8.50	4.00	8.00	
8.50	4.00	8.00	
8.00	4.00	8.00	
8.00	4.00	8.00	
7.00	3.75	6.75	
6.50	3.50	6.50	
6.50	3.00	6.50	
6.25	3.00	6.00	
6.00	2.33	3.00	
6.00	1.50	3.00	
5.50	1.33	1.75	
5.00	1.00	1.50	
5.00	.00	1.50	
		1.50	

Number 64
Median 6.00

SPEECH

Group I Dorm Women		Group II Dorm Men
20.25	8.25	10.00
16.25	6.00	9.00
14.50	5.00	8.00
14.00	4.50	8.00
12.00	2.50	6.00
10.50	2.25	3.00
10.50	.00	.00
9.00	.00	

Number 23
Median 8.00

App. XIV

STUDY TIME CHART

FORM A

WINTER TERM
1969

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
LASS	Text Reading: Time: Assignment Preparation Time: Lab Work Time:						
LASS							
LASS							
LASS							
LASS							
her ading r ying							

February 5, 1969

To: Knox Faculty

From: George Melville

The accompanying information is in support of the joint recommendation of the Academic Status and Instruction Committees not to permit grades in Military Science and advanced Physical Education to affect a student's grade index. This recommendation is an alternative to the kind of recommendation which would abolish credit in Military Science and advanced Physical Education.

As regards Physical Education the recommendation represents a middle ground between the position taken at other liberal arts colleges. A survey of the catalogues of nine colleges showed that: (1) Antioch, Dennison, and Oberlin offer a major in Physical Education, (2) Grinnell offers three courses plus Independent Study in Physical Education, and (3) Carlton, Lawrence, Reed, Wabash and Williams offer no advanced Physical Education credit. The catalogue of the tenth college selected for the sample is not available.

As was pointed out in the faculty discussion of January 27 our contract for the ROTC program requires credit for courses in ROTC. It appears, however, that Mr. Metz was correct in his argument that the army does not always enforce this credit requirement in the contract.

TABLE 1

DISTRIBUTION OF DIFFERENCES IN GRADE INDEXES FOR 300 LEVEL PHYSICAL EDUCATION AND FOR MILITARY SCIENCE COURSES FROM GRADES MADE IN ALL OTHER COURSES, 115 KNOX COLLEGE STUDENTS TAKING COURSES IN 300 LEVEL PHYSICAL EDUCATION AND IN MILITARY SCIENCE 1965-66 TO 1967-68, COMPARED WITH THE DISTRIBUTION OF DIFFERENCES IN GRADES IN 300 LEVEL PHYSICS COURSES FROM GRADES IN ALL OTHER COURSES, FIFTEEN STUDENTS TAKING 300 LEVEL PHYSICS, 1967-68

Given Index — Index for Other Courses	P.E. and MS Weighted* Frequency*	Phys 300 Weighted* Frequency*
-.75 and under -.50		.62
-.50 and under -.25	.72	.62
-.25 and under .00	1.54	4.85
.00 and under .25	5.00	5.67
.25 and under .50	3.78	.84
.50 and under .75	12.91	1.05
.75 and under 1.00	14.26	1.15
1.00 and under 1.25	20.28	
1.25 and under 1.50	25.76	.20
1.50 and under 1.75	7.23	
1.75 and under 2.00	12.13	
2.00 and under 2.25	8.83	
2.25 and under 2.50	1.84	
2.50 and under 2.75	.72	
Totals	115.	15.

*Weighted Frequency - units of credit in given field divided by total number of students taking such courses/total number of credits earned in all class intervals.

Source: Office of Institutional Research
January, 1969

TABLE 11

TEST OF SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN DIFFERENCES

Difference in Grades Made in 300 Level PE and Military Science From Grades Made in All Other Courses	Difference in Grades Made in 300 Physics From Grades in All Other Courses
Mean Difference = 1.19	Mean Difference = .22
Standard Deviation = .58	Standard Deviation = .42
Size of Sample = 115	Size of Sample = 15

$$t = \frac{(1.19 - .22) - 0}{\sqrt{.0029 + .0126}} = .97/.124 = 7.8 > 2.6$$

CONCLUSION: It has been suggested that the population of differences between grades made in 300 level Physical Education courses and in Military Science courses and the grades made by these students in all other courses is not dissimilar from corresponding differences in other departments using 300 level courses as a basis of comparison. Students taking 300 level Physics courses were suggested as providing a basis of comparison or "control group".

If the mean difference in indexes involving the former group does in fact belong to the same population of differences as the latter group, only once in every hundred samples taken would we expect the ratio of the difference between sample means to their standard error of the difference to produce a value greater than 2.6.

Since we in fact obtained a much larger value for this ratio 7.8, we may conclude with an extremely high degree of certainty that the difference in samples results from an actual difference in populations. This conclusion supports the recommendation not to allow grades in 300 level PE and in Military Science to be counted into the students index.

APPENDIX XVI

February 7, 1969

ENROLLMENT PROCEDURES: INSTRUCTIONS TO ACADEMIC ADVISERS

Note: In the left most column of the class schedule is designated a three digit Identification Number for each class which has been scheduled. These numbers will be used in the enrollment process to identify on a salmon colored enrollment card those scheduled classes which the student proposes to take. (See the procedure for "mark sensing" of enrollment cards on the accompanying page)

Directions:

ON THE STUDENT'S ENROLLMENT SCHEDULE FORM

1. List the several scheduled classes the student proposes to take in order of the student's preference. Be sure to include Physical Education classes where required.

2. State the period each class meets at the appropriate days of the week and the amount of credit associated with the course.

3. Pencil the class Identification Number in the "remarks" column after each scheduled class.

4. Courses the student proposes to take at Monmouth College have not been given Identification Numbers but should be listed and the appropriate credit stated. These classes should be noted with a large M.C. in the "remarks" column.

5. Courses in Advanced Studies, Independent Studies and Applied Music have not been given Identification Numbers but should be listed and the appropriate credit stated. The name of the faculty director should be stated in the "remarks" column.

6. Total the credit to be attempted.

ON THE STUDENT'S ENROLLMENT CARD

1. Appropriately mark sense on this card the Identification Number of each scheduled class the student intends to take in the columns corresponding to the student's stated preference.

2. Courses to be taken at Monmouth, Advanced Studies, Independent Studies and Applied Music cannot be listed on this card.

GIVE THE STUDENT A COPY OF HIS PROPOSED SCHEDULE AND RETAIN ONE COPY FOR YOUR RECORDS. RETURN THE REGISTRAR'S COPIES OF THE STUDENTS' ENROLLMENT SCHEDULES TOGETHER WITH THE COMPLETED ENROLLMENT CARDS BY FEBRUARY 21ST.

Procedures: The Office of Data Processing and the Computer Center will control enrollment through the enrollment cards. In cases where classes are filled a rationing of spaces will occur on the following bases:

(1) instructor's reservations
(2) class standing
(3) order of preference stated
(4) random selection

When a student is closed out of a particular section (or lab) of a course, he will be placed in another section (or lab) consistent with his remaining schedule. Students closed out of courses where other sections are not available will be notified and asked to return to their adviser for enrollment in other courses. A supplementary enrollment to handle alternative enrollments to closed courses and late enrollments will occur shortly after the original run. Students merely wanting to change their enrollments may not do so until the first day of the following term.

SAMPLE ENROLLMENT SCHEDULE

STUDENT NAME Jones, John H.

DATE 3rd Term 1968-69
MAJOR
ADVISOR Smith

COURSE	SECTION	M	T	W	T	F	OR	REMARKS
Geol 101		1	1	1	1	1	1	384
Hist 106	2	2		2		2	1	439
Physics 223	1	5		5-6			½	702
Econ 351							½	White
P.E.	D		4		4			586
							3	

M	F		SPEC	SR.	JR.	SOPH.	FR.
X		TO REGISTRAR				X	

R.711 JOHN HARR S & ASSOCIATES-MOLINE, ILL. C 72073

Jones, John H.

RESERVE FOR DATA PROCESSING

COURSE CODE 1ST CHOICE | COURSE CODE 2ND CHOICE | COURSE CODE 3RD CHOICE | COURSE CODE 4TH CHOICE | COURSE CODE 5TH CHOICE | COURSE CODE 6TH CHOICE

ENROLLMENT CARD

ENROLLMENT CARD KNOX COLLEGE, GALESBURG ILL.

IBM B69387

MARK SENSING OF ENROLLMENT CARDS

The Identification Numbers written in the "remarks" column of the student's enrollment schedule are entered on the enrollment card with the special pencil sent to you with your enrollment materials.

In the given example the student's first preference of classes is identified as 384. This number is entered on the enrollment card by blacking out the 3 oval in the left most column of the 1st choice field, by blacking out the 8 oval in the center column of this field, and by blacking out the 4 oval in the right most column of this field. The Identification Numbers of the remaining scheduled classes are entered in similiar fashion in the order of stated preference.

Be sure to completely blacken the appropriate ovals. Do not blacken two or more ovals in any one column.

MAR 1963

5-7-69

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
101	AS	202			CHG ENV AM CULT	1.	MTWTF2			38	
112	ART	103			FORM AND EXP	1.	TT 1&2		52	52	CLOSED
114	ART	202			DRAWING	1.	MTWTF5		30	32	CLOSED
116	ART	301			ADV DRAWING	1.	MTWTF5		3	3	CLOSED
118	ART	305			PAINTING I	1.	MWF2&3		25	25	CLOSED
120	ART	305A			PAINTING I	0.5	MW 2&3		5	5	CLOSED
122	ART	311			PRINTS I	1.	MWF4&5		25	12	
124	ART	311A			PRINTS I	0.5	MW 4&5		25	1	
126	ART	315			SCULPTURE I	1.	MWF4&5		11	11	CLOSED
128	ART	315A			SCULPTURE I	0.5	MW 4&5				CANCELLED
130	ART	319-	1		CERAMICS I	1.	MWF2&3		20	15	closed
134	ART	319	2		CERAMICS I	1.	MWF5&6		20	19	
132	ART	319A			CERAMICS I	0.5	MW 2&3		~~20~~	6	closed
136	ART	340			PREHIS & N EAS	1.	MWT 4			34	
138	ART	450			COMP EXAM	1.	TBA			16	
149	BIOL	212		1	MICROBIOLOGY	1.	MWF 2	TU 2&3	15	12	
151	BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15	CLOSED
153	BIOL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
155	BIOL	241			NAT HIST VERTE	1.	TW 4		24	23	
157	BIOL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
159	BIOL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3	
161	BIOL	341			GEN EMBRYOL	1.	MTWTF3			13	
163	BIOL	361			BIOL SEMINAR	0.5	MW 6			11	
165	BIOL	450			COMP EXAM	1.	TBA			23	
176	CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
178	CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17	
180	CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
182	CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7	
184	CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
186	CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4	
188	CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
190	CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0	
192	CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16	
194	CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5	
196	CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3	
198	CHEM	301			INORGAN CHEM	1.	MWTF 3			14	
200	CHEM	303			SEMINAR IN CHEM	0.5	TU 6			4	
202	CHEM	334			ADV PHYS CHEM	1.	MWTF 5			8	
204	CHEM	450			COMP EXAM	1.	TU 2			9	
215	CS	101			INT TO COMP SCI	1.	MTWTF1			38	
217	CS	201			COMP & PROGAM	1.	MTWTF3		25	25	CLOSED

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
226	ECON	103			AMER ECON HIST	1.	MTWTF2		45	47	CLOSED
228	ECON	202			PRINCIPLES II	1.	MWTF 4			22	
230	ECON	303			STATISTICS	1.	MTWTF3			28	
232	ECON	312			COMPUTER APPL	1.	TBA		10	8	
234	ECON	323	1		MANAGEMENT ACCT	1.	MF 2	TU 2		3	
236	ECON	323	2		MANAGEMENT ACCT	1.	MF 2	W 2		16	
238	ECON	323	3		MANAGEMENT ACCT	1.	MF 2	TH 2		5	
240	ECON	324			MONEY BANKING	1.	MWTF 4			24	
242	ECON	325			PUB FINANCE	1.	MWF 5			23	
244	ECON	326			INTER TRADE	1.	MWF 2			25	
246	ECON	328			ECON GROWTH	1.	MWTF 1			16	
248	ECON	450			COMP EXAM	1.	TT 5			24	
259	EDUC	309			LG ART EL SCH	1.	MTWTF4			16	
261	EDUC	317			PE IN ELE SCH	0.5	W 7			18	
263	EDUC	322			ENG IN SEC SCH	0.5	TU 7			8	
265	EDUC	324			MATH IN SEC SCH	0.5	TBA			7	
267	EDUC	325			ART IN SEC SCH	0.5	TBA			1	
269	EDUC	327			SOC ST SEC SCH	0.5	TT 6			12	
271	EDUC	328			SCI IN SEC SCH	0.5	TBA			3	
273	EDUC	345			STUD TCH ELEM	1.	TBA			4	
275	EDUC	346			STUD TCH ELEM	1.	TBA			4	
277	EDUC	347			STUD TCH ELEM	0.5	TBA			4	
279	EDUC	365			STUD TCH SEC	1.	TBA			2	
281	EDUC	366			STUD TCH SEC	1.	TBA			2	
283	EDUC	369	1		HIST & PHIL	0.5	MWF 1		26	26	CLOSED
285	EDUC	369	2		HIST & PHIL	0.5	MWF 6		25	20	
287	EDUC	390			LNG THEC ADOL P	1.0	MWF4W5			36	
289	EDUC	391			METH EVAL SEC E	1.0	MWF4W5			35	
291	EDUC	450			COMP EXAM	1.	TBA			12	
302	ENG	101	1		FRESHMAN ENG	1.	MWF 1		22	22	CLOSED
304	ENG	101	2		FRESHMAN ENG	1.	MWF 2		22	21	
306	ENG	101	3		FRESHMAN ENG	1.	MTT 3		22	22	CLOSED
308	ENG	101	4		FRESHMAN ENG	1.	MWF 4				CANCELLED
310	ENG	101	5		FRESHMAN ENG	1.	MTT 5		22	17	
312	ENG	201			EXPOS WRIT	1.	MWF 5		22	22	CLOSED
314	ENG	207			BEGIN WRIT-FICT	1.	MW 5		21	23	CLOSED
316	ENG	208			BEGIN WRIT-POET	1.	MWF 5		20	22	CLOSED
318	ENG	209			BEG PLAYWRITING	1.	MWF 5		20	7	
320	ENG	221	1		INTRO TO POETRY	1.	MWF 4		25	25	CLOSED
321	ENG	221	2		INTRO TO POETRY	1.	MWF 4		20	24	CLOSED
322	ENG	222	1		INTRO TO FICT	1.	MWF 4		25	25	CLOSED

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
324	ENG	222	2		INTRO TO FICT	1.	MWF 5		25	24	
325	ENG	222	3		INTRO TO FICT	1.	MWF 4		25	25	CLOSED
326	ENG	223	1		INTRO TO DRAMA	1.	MWF 3		25	25	CLOSED
327	ENG	223	2		INTRO TO DRAMA	1.	MWF 3		20	27	CLOSED
328	ENG	241			MAST LIT I	1.	MWF 2		25	27	CLOSED
330	ENG	242			MAST LIT II	1.	MWF 2		28	27	
331	ENG	311			ADV WRITING	1.	TBA			2	
332	ENG	318			AMER LIT II	1.	MTT 4		25	20	
334	ENG	323			STUD IN AM LIT	1.	TU 4&5		16	18	CLOSED
336	ENG	324			STUD IN AM LIT	1.	MWF 3		25	22	
338	ENG	327			STUD IN EN LIT	1.	TT 2&3		15	8	
340	ENG	330			CHAUCER	1.	MWF 2		25	19	
342	ENG	334			LIT CRIT	1.	MWF 4				CANCELLED
344	ENG	340			16TH CENT LIT	1.	MWF 3		30	22	
346	ENG	348			MOD DRAMA	1.	MTWF 5				CANCELLED
348	ENG	450			COMP EXAM	1.	TBA			28	
359	FR	103	1		ELEM FRENCH	1.	MTWTF6			25	
361	FR	103	2		ELEM FRENCH	1.	MTWTF2			17	
363	FR	103	3		ELEM FRENCH	1.	MTWTF4		26	27	CLOSED
365	FR	201			INTER FRENCH	1.	MTWTF3			27	
367	FR	202			READ FR LIT	1.	MTWTF5			19	
369	FR	319			MEDIEVAL LIT	1.	MWF 4			13	
371	FR	320			WRITTEN & ORAL	1.	MTWTF3			37	
373	FR	450			COMP EXAM	1.	TBA			14	
384	GEOL	101			GEN GEOL I	1.	MTWTF1		57	57	CLOSED
386	GEOL	103			GEN GEOL III	1.	MTWTF4			17	
388	GEOL	305			IG METAMOR ORE	1.	MTWF 5			5	
390	GEOL	311			STRUCTUR GEOL	1.	MTWF 6			8	
392	GEOL	450			COMP EXAM	1.	TBA			3	
403	GERM	103	1		ELEM GERMAN	1.	MTWTF1		18	18	CLOSED
405	GERM	103	2		ELEM GERMAN	1.	MTWTF2			15	
406	GERM	103	3		ELEM GERMAN	1.	MTWTF1			17	
407	GERM	201			INTER GERMAN	1.	MTWTF2			10	
409	GERM	311			BAROQUE ENLIG	1.	MWTF 4				CANCELLED
411	GERM	317			CLASS PERIOD	1.	MWTF 2			4	
413	GERM	326			GERMANY E & W	1.	MTWF 4			6	
415	GERM	450			COMP EXAM	1.	TBA			2	
426	GRP	122			NON-VIOL DIR	0.5	W 7			51	
428	GRP	123			TOPICS-MIL HIST	0.5	SAT			5	
437	HIST	106	1		WEST CIV	1.	MWT 1		32	32	CLOSED
439	HIST	106	2		WEST CIV	1.	MWF 2		32	31	

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
441	HIST	106	3		WEST CIV	1.	MWT 3		32	32	CLOSED
443	HIST	106	4		WEST CIV	1.	MWTF 4		32	37	CLOSED
445	HIST	106	5		WEST CIV	1.	MTWT 5		32	33	CLOSED
447	HIST	106	6		WEST CIV	1.	MTWT 6		32	33	CLOSED
449	HIST	202	1		AMER HIST	1.	MWT 3		51	54	CLOSED
451	HIST	202	2		AMER HIST	1.	MTT 2		45	36	
453	HIST	303			TUDOR STUART	1.	MTWT 4			4	
455	HIST	312			REFORMATION	1.	MTWT 2			7	
457	HIST	324			GERM 1914 45	1.	MWF 3			21	
459	HIST	333			20TH CENT NEGRO	1.	TT 5		22	22	CLOSED
461	HIST	342			AMER FOR REL	1.	MWF 5		20	22	CLOSED
463	HIST	387			INDIA & S E AS	1.	TT 4			19	
465	HIST	450			COMP EXAM	1.	TBA			24	
476	MATH	102			BASIC MATH II	1.	MTWTF4			22	
478	MATH	123			FINITE MATH	1.	MTWTF5			8	
480	MATH	152			CALCULUS II	1.	MTWTF2			21	
482	MATH	301	1		LINEAR ALG	1.	MTWTF2		20	12	
484	MATH	301	2		LINEAR ALG	1.	MTWTF3		27	27	CLOSED
486	MATH	301	3		LINEAR ALG	1.	MTWTF5		25	24	
488	MATH	312			CALCULUS IV	1.	MTWTF1			13	
490	MATH	313			INTRO TOPOLOGY	1.	MTWTF3			13	
492	MATH	316			FOUND OF GEOM	1.	MTWTF5			13	
494	MATH	322			MATH STAT II	1.	MTWTF4			10	
496	MATH	327			FOUND OF MATH	1.	MTWTF2			6	
498	MATH	333			COMPLEX ANAL	1.	MTWTF1			10	
500	MATH	334			REAL VARIABLE	1.	MTWTF3			4	
502	MATH	349			SEM IN ALGEBRA	1.	MTWTF4			3	
504	MATH	450			COMP EXAM	1.	TBA			13	
515	MS	303	1		JR MIL SCI	0.5	TT 1			10	
517	MS	303	2		JR MIL SCI	0.5	TT 4			6	
519	MS	303	3		JR MIL SCI	0.5	TT 6			6	
521	MS	313	1		SR MIL SCI	0.5	TT 1			5	
523	MS	313	2		SR MIL SCI	0.5	TT 4			9	
525	MS	313	3		SR MIL SCI	0.5	TT 6			0	
536	MUS	103			THEORY HIS III	1.	MTWTF2			12	
538	MUS	106			INT TO MUS	1.	MTTF 2		35	37	CLOSED
540	MUS	207			THEORY HIST VI	1.	MTWT 3			4	
542	MUS	303			COMPOSITION	1.	TBA			1	
544	MUS	312			INST CONDUCT	0.5	MTT 5			2	
546	MUS	322			FUND OF MUS	0.5	MWF 4		8	3	
548	MUS	450			COMP EXAM	1.	MWF 4			2	

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
559	PHIL	115	1		INT TO PHIL	1.	MWF 3		61	61	CLOSED
561	PHIL	115	2		INT TO PHIL	1.	MWF 5		25	25	CLOSED
563	PHIL	212	1		PHIL PERS VALU	1.	TH 7		22	23	CLOSED
564	PHIL	212	2		PHIL PERS VALU	1.	TU 4&5		18	18	CLOSED
566	PHIL	212	3		PHIL PERS VALU	1.	TH 4&5		4	4	CLOSED
565	PHIL	303			CONTEMP ANAL	1.	TBA				CANCELLED
567	PHIL	330			PROB IN ETHICS	1.	TBA			10	
569	PHIL	450			COMP EXAM	1.	TBA			1	
580	PEM		A		SWIMMING	.	MW 4				CANCELLED
582	PEM		B		SWIM-DIVING	.	TT 2		12	3	
584	PEM		C		LIFE SAVING	.	MW 3		12	3	
586	PEM		D		ADV SWIMMING	.	TT 4		18	5	
588	PEM		E		WSI MIXED	.	TBA		12	8	
590	PEM	001	F		GOLF MIXED	.	MW 3		12	1	
592	PEM	001	G		GOLF MIXED	.	TT 3		12	10	
594	PEM	002	H		TENNIS	.	MW 4		12	6	
596	PEM	002	J		TENNIS	.	TT 4		12	9	
598	PEM	002	K		TENNIS	.	MW 5		12	8	
600	PEM	002	L		TENNIS	.	TT 5		12	6	
602	PEM	003	M		ARCHERY MIXED	.	MW 3		12	3	
604	PEM	003	N		ARCHERY MIXED	.	TT 3		12	6	
606	PEM		P		RIFLE MARKS	.	TBA		18	19	CLOSED
608	PEM	004	Q		WEIGHT TRAIN	.	MW 4		15	12	
610	PEM	004	R		WEIGHT TRAIN	.	TT 4				CANCELLED
612	PEM	004	S		WEIGHT TRAIN	.	MW 5				CANCELLED
614	PEM	004	T		WEIGHT TRAIN	.	TT 5				CANCELLED
616	PEM	005	V		CHOICE ACTIVITY	.	MW 4		40	25	
618	PEM	005	W		CHOICE ACTIVITY	.	TT 4		40	24	
620	PEM	005	X		CHOICE ACTIVITY	.	MW 5		40	17	
622	PEM	005	Y		CHOICE ACTIVITY	.	TT 5		40	16	
624	PEM		Z		INTERCOLL ATHLE	.	TBA			50	
626	PEM	321			COACH OF FTBL	0.5	TBA			1	
628	PEM	322			COACH SW&BSBALL	1.	TBA			1	
630	PEM	324			COACH BBALL	0.5	TBA			2	
632	PEM	326			ORG&ADM PE&ATH	1.	TBA			2	
634	PEM	327			CARE & PREVENT	1.0	TBA			7	
647	PEW	007	B		ARCHERY MIXED	.	MW 3		12	5	
649	PEW	007	C		ARCHERY MIXED	.	TT 3		12	6	
645	PEW	006	A		ARCHERY	.	TT 2		12	10	
651	PEW	006	D		ARCHERY	.	MW 4		12	11	
653	PEW	006	E		ARCHERY	.	TT 4		12	12	CLOSED

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME		LAB TIME	MAX SIZE	DEMAND	
655	PEW	006	F		ARCHERY	.	MW	5				CANCELLED
657	PEW	008	G		BOWLING	.	MW	4		12	12	CLOSED
659	PEW	008	H		BOWLING	.	MW	6		12	12	CLOSED
661	PEW		J		DANCE	.	TT	2				CANCELLED
663	PEW	009	K		GOLF MIXED	.	MW	3		12	9	
665	PEW	009	L		GOLF MIXED	.	TT	3		12	10	
667	PEW		M		SWIM-INTERMED	.	MW	5				CANCELLED
669	PEW		N		SWIM BEG-INTER	.	MW	6		15	12	
671	PEW		P		SWIMMING WSI	.	TBA			15	15	CLOSED
662	PEW	010	J		TENNIS	.	TT	2		12	9	
668	PEW	010	M		TENNIS	.	MW	5		12	13	CLOSED
673	PEW	010	Q		TENNIS	.	MW	2		12	10	
675	PEW	010	R		TENNIS	.	MW	3		12	12	CLOSED
677	PEW	010	S		TENNIS	.	TT	3		12	12	CLOSED
679	PEW	010	T		TENNIS	.	TT	4		12	12	CLOSED
681	PEW	010	U		TENNIS	.	TT	5		12	12	CLOSED
683	PEW		V		PUDDLES	.	TBA				5	
685	PEW		W		DANCE CLUB	.	TBA				6	
692	PHYS	123		1	COLL PHYS III	1.	MWF	2	TH 1&2		5	
694	PHYS	123		2	COLL PHYS III	1.	MWF	2	TH 4&5		7	
696	PHYS	133		1	GEN PHYS II	1.	MWF	2	TU 1&2		17	
698	PHYS	133		2	GEN PHYS II	1.	MWF	2	TU 4&5		27	
700	PHYS	133		3	GEN PHYS II	1.	MWF	2	W. 5&6		6	
702	PHYS	223		1	ELEC INSTRUMENT	0.5	M	5	W 5&6		13	
704	PHYS	223		2	ELEC INSTRUMENT	0.5	M	5	F 5&6		1	
706	PHYS	233		1	WAVES	1.	MWF	4	TU 5&6		6	
708	PHYS	233		2	WAVES	1.	MWF	4	TH 5&6		6	
710	PHYS	253			SCI AND SOC	1.	MWF	3		51	53	CLOSED
712	PHYS	303			NUCLEAR PHYS	1.	TBA					CANCELLED
714	PHYS	312			ADV LAB II	0.5	TBA				1	
716	PHYS	343			QUANTUM MECH	1.	MWTF	1			5	
718	PHYS	450			COMP EXAM	1.	TBA				4	
729	PS	201			AM NATL GOVN	1.	MTWTF	2			71	
731	PS	202			ST REG LOCAL	1.	MWF	4		32	36	CLOSED
733	PS	203			EUR GOVN	1.	MWF	3		65	69	CLOSED
735	PS	302			JURISPRUDENCE	1.	TT	3		30	28	
737	PS	312			INT LAW & ORG	1.	MWF	5		15	7	
739	PS	319			ASIAN AFR GOV	1.	TBA			10	8	
741	PS	336			CONT POL PROC	1.	MWF	3		15	7	
743	PS	354			SEM LEGIS BEHAV	1.	TBA			10	6	
745	PS	450			COMP EXAM	1.	TBA				27	

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
756	PSY	111			INTRO PSYCH	1.	MTWT 1		45	45	CLOSED
758	PSY	203			STAT EXP PROC	1.	MWF 3		45	46	CLOSED
760	PSY	303			MOTIVATION	1.	MWF 4			22	
762	PSY	303A			LAB IN MOTIV	0.5	TBA			11	
764	PSY	315			CLIN PRACTICUM	1.0	TBA			5	
766	PSY	450			COMP EXAM	1.	TBA			7	
777	REL	301			JUD CATH PROT	1.	MWF 5			22	
779	REL	310			BUDDHISM	1.	MWF 4			41	
790	RUSS	103	1		ELEM RUSS	1.	MTWTF3			22	
792	RUSS	103	2		ELEM RUSS	1.	MTWTF5			16	
794	RUSS	210			CONV COMP	1.	MTWF 1			8	
796	RUSS	302			19TH CENT LIT	1.	MWF 3			3	
798	RUSS	450			COMP EXAM	1.	TBA			0	
809	ANTH	201			INTRO ANTH	1.	MWF 1		65	65	CLOSED
811	SOC	201			INTRO TO SOC	1.	MTWTF2		99	64	
813	SOC	303			URBAN PROB	1.	MW5 W7		40	40	CLOSED
815	SOC	307	1		DEV BEHAV	1.	TT 3		20	24	CLOSED
817	SOC	307	2		DEV BEHAV	1.	TT 4		21	21	CLOSED
819	SOC	310			SMALL GROUPS	1.	MWF 4		30	37	CLOSED
821	SOC	450			COMP EXAM	1.	TBA			20	
832	SPAN	103	1		ELEM SPAN	1.	MTWTF1			19	
834	SPAN	103	2		ELEM SPAN	1.	MTWTF2		26	25	
836	SPAN	103	3		ELEM SPAN	1.	MTWTF4			26	
837	SPAN	201			INTER SPAN	1.	TBA			1	
838	SPAN	302			MOD FICT POET	1.	MTTF 3			10	
840	SPAN	320			WRITT AND ORAL	1.	MTWTF2			15	
842	SPAN	325			SPANISH CULTURE	0.5	MWF 1			10	
844	SPAN	450			COMP EXAM	1.	TBA			6	
855	SPCH	101			PUB SPEAKING	0.5	MTT 5		20	22	CLOSED
856	SPCH	291			THEATRE PART	1.	TBA			11	
857	SPCH	332			ADV ACTING	1.	MTWTF4		20	13	
859	SPCH	334			DIRECTING	1.	MTWTF3		20	17	
861	SPCH	341			TH RENAIS-18TH	1.	MWF 5			11	
862	SPCH	392			THEATRE PART	1.	TBA			2	
863	SPCH	450			COMP EXAM	1.	TBA			8	
888					ACM--ARGONNE	.				1	
898					ACM-NEWBERRY	.				1	
999					FRENCH PROGRAM	.				18	

After Supplementary Enrollment 3/7/69

APPENDIX XVI

MEETING DURING PERIOD 1

PT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	NO. CLOSED
T	103			FORM AND EXP	1.	TT 1&2		52	52	
CL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
CL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
CL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3	
EM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
EM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17	
EM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
EM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7	
EM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
EM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4	
EM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
EM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0	
S	101			INT TO COMP SCI	1.	MTWTF1			38	
CON	328			ECON GROWTH	1.	MWTF 1			16	
CLC	369	1		HIST & PHIL	0.5	MWF 1		26	26	
NG	101	1		FRESHMAN ENG	1.	MWF 1		22	22	
ECL	101			GEN GEOL I	1.	MTWTF1			57	
ERM	103	1		ELEM GERMAN	1.	MTWTF1		18	18	
ERM	103	3		ELEM GERMAN	1.	MTWTF1			17	
IST	106	1		WEST CIV	1.	MWT 1		32	32	
ATH	312			CALCULUS IV	1.	MTWTF1			13	
ATH	333			COMPLEX ANAL	1.	MTWTF1			10	
S	303	1		JR MIL SCI	0.5	TT 1			10	
S	313	1		SR MIL SCI	0.5	TT 1			5	
HYS	123		1	COLL PHYS III	1.	MWF 2	TH 1&2		5	
HYS	133		1	GEN PHYS II	1.	MWF 2	TU 1&2		17	
HYS	343			QUANTUM MECH	1.	MWTF 1			5	
SY	111			INTRO PSYCH	1.	MTWT 1		45	45	
LSS	210			CONV COMP	1.	MTWF 1			8	
NTH	201			INTRO ANTH	1.	MWF 1		65	65	
PAN	103	1		ELEM SPAN	1.	MTWTF1			19	
PAN	325			SPANISH CULTURE	0.5	MWF 1			10	

COURSES 551 DEMAND 0 CLOSED

SES MEETING DURING PERIOD 2

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	N CLO
AS	202			CHG ENV AM CULT	1.	MTWTF2			38	
ART	103			FORM AND EXP	1.	TT 1&2		52	52	
ART	305			PAINTING I	1.	MWF2&3		25	25	
ART	305A			PAINTING I	0.5	MW 2&3		5	5	
ART	319	1		CERAMICS I	1.	MWF2&3		20	15	
ART	319A			CERAMICS I	0.5	MW 2&3		20	6	
BIOL	212		1	MICROBIOLOGY	1.	MWF 2	TU 2&3	15	12	
BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15	
BIOL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
BIOL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16	
CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5	
CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3	
CHEM	450			COMP EXAM	1.	TU 2			9	
ECON	103			AMER ECON HIST	1.	MTWTF2		45	47	
ECON	323		1	MANAGEMENT ACCT	1.	MF 2	TU 2		3	
ECON	323		2	MANAGEMENT ACCT	1.	MF 2	W 2		16	
ECON	323		3	MANAGEMENT ACCT	1.	MF 2	TH 2		5	
ECON	326			INTER TRADE	1.	MWF 2			25	
ENG	101	2		FRESHMAN ENG	1.	MWF 2		22	21	
ENG	241			MAST LIT I	1.	MWF 2		25	27	
ENG	242			MAST LIT II	1.	MWF 2		28	27	
ENG	327			STUD IN EN LIT	1.	TT 2&3		15	8	
ENG	330			CHAUCER	1.	MWF 2		25	19	
FR	103	2		ELEM FRENCH	1.	MTWTF2			17	
GERM	103	2		ELEM GERMAN	1.	MTWTF2			15	
GERM	201			INTER GERMAN	1.	MTWTF2			10	
GERM	317			CLASS PERIOD	1.	MWTF 2			4	
HIST	106	2		WEST CIV	1.	MWF 2		32	31	
HIST	202	2		AMER HIST	1.	MTT 2		45	36	
HIST	312			REFORMATION	1.	MTWT 2			7	
MATH	152			CALCULUS II	1.	MTWTF2			21	
MATH	301	1		LINEAR ALG	1.	MTWTF2		20	12	
MATH	327			FOUND OF MATH	1.	MTWTF2			6	
MUS	103			THEORY HIS III	1.	MTWTF2			12	
MUS	106			INT TO MUS	1.	MTTF 2		35	37	
PEM		B		SWIM-DIVING	.	TT 2		12	3	
PEW	006	A		ARCHERY	.	TT 2		12	10	
PEW	010	J		TENNIS	.	TT 2		12	9	
PEW	010	C		TENNIS	.	MW 2		12	10	
PHYS	123		1	COLL PHYS III	1.	MWF 2	TH 1&2		5	
PHYS	123		2	COLL PHYS III	1.	MWF 2	TH 4&5		7	
PHYS	133		1	GEN PHYS II	1.	MWF 2	TU 1&2		17	
PHYS	133		2	GEN PHYS II	1.	MWF 2	TU 4&5		27	
PHYS	133		3	GEN PHYS II	1.	MWF 2	W 5&6		6	
PS	201			AM NATL GOVN	1.	MTWTF2			71	
SOC	201			INTRO TO SOC	1.	MTWTF2		99	64	
SPAN	103	2		ELEM SPAN	1.	MTWTF2		26	25	
SPAN	320			WRITT AND ORAL	1.	MTWTF2			15	

COURSES 906 DEMAND 6 CLOSED

ES MEETING DURING PERIOD 3

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	NO. CLOSED
ART	305			PAINTING I	1.	MWF2&3		25	25	
ART	305A			PAINTING I	0.5	MW 2&3		5	5	
ART	319	1		CERAMICS I	1.	MWF2&3		20	15	
ART	319A			CERAMICS I	0.5	MW 2&3		20	6	
BIOL	212		1	MICROBIOLOGY	1.	MWF 2	TU 2&3	15	12	
BIOL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
BIOL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
BIOL	341			GEN EMBRYOL	1.	MTWTF3			13	
CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
CHEM	301			INORGAN CHEM	1.	MWTF 3			14	
CS	201			COMP & PROGRAM	1.	MTWTF3		25	25	
ECON	303			STATISTICS	1.	MTWTF3			28	
ENG	101	3		FRESHMAN ENG	1.	MTT 3		22	22	
ENG	223	1		INTRO TO DRAMA	1.	MWF 3		25	25	
ENG	223	2		INTRO TO DRAMA	1.	MWF 3		20	27	7
ENG	324			STUD IN AM LIT	1.	MWF 3		25	22	
ENG	327			STUD IN EN LIT	1.	TT 2&3		15	8	
ENG	340			16TH CENT LIT	1.	MWF 3		30	22	
FR	201			INTER FRENCH	1.	MTWTF3			27	
FR	320			WRITTEN & ORAL	1.	MTWTF3			37	
HIST	106	3		WEST CIV	1.	MWT 3		32	32	
HIST	202	1		AMER HIST	1.	MWT 3		51	54	3
HIST	324			GERM 1914 45	1.	MWF 3			21	
MATH	301	2		LINEAR ALG	1.	MTWTF3		27	27	
MATH	313			INTRO TOPOLOGY	1.	MTWTF3			13	
MATH	334			REAL VARIABLE	1.	MTWTF3			4	
MUS	207			THEORY HIST VI	1.	MTWT 3			4	
PHIL	115	1		INT TO PHIL	1.	MWF 3		61	61	
PEM		C		LIFE SAVING	.	MW 3		12	3	
PEM	001	F		GOLF MIXED	.	MW 3		12	1	
PEM	001	G		GOLF MIXED	.	TT 3		12	10	
PEM	003	M		ARCHERY MIXED	.	MW 3		12	3	
PEM	003	N		ARCHERY MIXED	.	TT 3		12	6	
PEW	007	B		ARCHERY MIXED	.	MW 3		12	5	
PEW	007	C		ARCHERY MIXED	.	TT 3		12	6	
PEW	009	K		GOLF MIXED	.	MW 3		12	9	
PEW	009	L		GOLF MIXED	.	TT 3		12	10	
PEW	010	R		TENNIS	.	MW 3		12	12	
PEW	010	S		TENNIS	.	TT 3		12	12	
PHYS	253			SCI AND SOC	1.	MWF 3		51	53	2
PS	203			ELR GOVN	1.	MWF 3		65	69	4
PS	302			JURISPRUDENCE	1.	TT 3		30	28	
PS	336			CONT POL PROC	1.	MWF 3		15	7	
PSY	203			STAT EXP PROC	1.	MWF 3		45	46	1
RUSS	103	1		ELEM RUSS	1.	MTWTF3			22	
RUSS	302			19TH CENT LIT	1.	MWF 3			3	
SOC	307	1		DEV BEHAV	1.	TT 3		20	24	4
SPAN	302			MOD FICT POET	1.	MTTF 3			10	
SPCH	334			DIRECTING	1.	MTWTF3		20	17	

COURSES 935 DEMAND 21 CLOSED

SES MEETING DURING PERIOD 4

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	I CLL
ART	311			PRINTS I	1.	MWF4&5		25	12	
ART	311A			PRINTS I	0.5	MW 4&5		25	1	
ART	315			SCULPTURE I	1.	MWF4&5		11	11	
ART	340			PREHIS & N EAS	1.	MWT 4			34	
BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15	
BIOL	241			NAT HIST VERTE	1.	TW 4		24	23	
BIOL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3	
CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17	
CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7	
CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4	
CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0	
CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16	
CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5	
CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3	
ECON	202			PRINCIPLES II	1.	MWTF 4			22	
ECON	324			MONEY BANKING	1.	MWTF 4			24	
EDUC	309			LG ART EL SCH	1.	MTWTF4			16	
EDUC	390			LNG THEC ADOL P	1.0	MWF4W5			36	
EDUC	391			METH EVAL SEC E	1.0	MWF4W5			35	
ENG	221	1		INTRO TO POETRY	1.	MWF 4		25	25	
ENG	221	2		INTRO TO POETRY	1.	MWF 4		20	24	4
ENG	222	1		INTRO TO FICT	1.	MWF 4		25	25	
ENG	222	3		INTRO TO FICT	1.	MWF 4		25	25	
ENG	318			AMER LIT II	1.	MTT 4		25	20	
ENG	323			STUD IN AM LIT	1.	TU 4&5		16	18	2
FR	103	3		ELEM FRENCH	1.	MTWTF4		26	27	1
FR	319			MEDIEVAL LIT	1.	MWF 4			13	
GEOL	103			GEN GEOL III	1.	MTWTF4			17	
GERM	326			GERMANY E & W	1.	MTWF 4			6	
HIST	106	4		WEST CIV	1.	MWTF 4		32	37	5
HIST	303			TUDOR STUART	1.	MTWT 4			4	
HIST	387			INDIA & S E AS	1.	TT 4			19	
MATH	102			BASIC MATH II	1.	MTWTF4			22	
MATH	322			MATH STAT II	1.	MTWTF4			10	
MATH	349			SEM IN ALGEBRA	1.	MTWTF4			3	
MS	303	2		JR MIL SCI	0.5	TT 4			6	
MS	313	2		SR MIL SCI	0.5	TT 4			9	
MUS	322			FUND OF MUS	0.5	MWF 4		8	3	
MUS	450			COMP EXAM	1.	MWF 4			2	
PHIL	212	2		PHIL PERS VALU	1.	TU 4&5		18	18	
PHIL	212	3		PHIL PERS VALU	1.	TH 4&5		4	4	
PEM		D		ADV SWIMMING	.	TT 4		18	5	
PEM	002	H		TENNIS	.	MW 4		12	6	
PEM	002	J		TENNIS	.	TT 4		12	9	
PEM	004	Q		WEIGHT TRAIN	.	MW 4		15	12	
PEM	005	V		CHOICE ACTIVITY	.	MW 4		40	25	
PEM	005	W		CHOICE ACTIVITY	.	TT 4		40	24	
PEW	006	D		ARCHERY	.	MW 4		12	11	
PEW	006	E		ARCHERY	.	TT 4		12	12	
PEW	008	G		BOWLING	.	MW 4		12	12	
PEW	010	T		TENNIS	.	TT 4		12	12	
PHYS	123		2	COLL PHYS III	1.	MWF 2	TH 4&5		7	
PHYS	133		2	GEN PHYS II	1.	MWF 2	TU 4&5		27	
PHYS	233		1	WAVES	1.	MWF 4	TU 5&6		6	

PHYS	233	2	WAVES	1.	MWF	4	TH 5&6		6
PS	202		ST REG LOCAL	1.	MWF	4		32	36
PSY	303		MOTIVATION	1.	MWF	4			22
REL	310		BUDDHISM	1.	MWF	4			41
SOC	307	2	DEV BEHAV	1.	TT	4		21	21
SOC	310		SMALL GROUPS	1.	MWF	4		30	37
SPAN	103	3	ELEM SPAN	1.	MTWTF	4			26
SPCH	332		ADV ACTING	1.	MTWTF	4		20	13

COURSES 991 DEMAND 23 CLOSED

SES MEETING DURING PERIOD 5

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	N CL
ART	202			DRAWING	1.	MTWTFS		30	32	
ART	301			ADV DRAWING	1.	MTWTFS		3	3	
ART	311			PRINTS I	1.	MWF4&5		25	12	
ART	311A			PRINTS I	0.5	MW 4&5		25	1	
ART	315			SCULPTURE I	1.	MWF4&5		11	11	
ART	319	2		CERAMICS I	1.	MWF5&6		20	19	
BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15	
BIOL	241			NAT HIST VERTE	1.	TW 4		24	23	
BIOL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3	
CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17	
CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7	
CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4	
CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0	
CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16	
CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5	
CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3	
CHEM	334			ADV PHYS CHEM	1.	MWTF 5			8	
ECON	325			PUB FINANCE	1.	MWF 5			23	
ECON	450			COMP EXAM	1.	TT 5			24	
EDUC	390			LNG THEO ADOL P	1.0	MWF4W5			36	
EDUC	391			METH EVAL SEC E	1.0	MWF4W5			35	
ENG	101	5		FRESHMAN ENG	1.	MTT 5		22	17	
ENG	201			EXPOS WRIT	1.	MWF 5		22	22	
ENG	207			BEGIN WRIT-FICT	1.	MW 5		21	23	2
ENG	208			BEGIN WRIT-POET	1.	MWF 5		20	22	2
ENG	209			BEG PLAYWRITING	1.	MWF 5		20	7	
ENG	222	2		INTRO TO FICT	1.	MWF 5		25	24	
ENG	323			STUD IN AM LIT	1.	TU 4&5		16	18	2
FR	202			READ FR LIT	1.	MTWTFS			19	
GEOL	305			IG METAMOR CRE	1.	MTWF 5			5	
HIST	106	5		WEST CIV	1.	MTWT 5		32	33	1
HIST	333			20TH CENT NEGRO	1.	TT 5		22	22	
HIST	342			AMER FOR REL	1.	MWF 5		20	22	2
MATH	123			FINITE MATH	1.	MTWTFS			8	
MATH	301	3		LINEAR ALG	1.	MTWTFS		25	24	
MATH	316			FOUND OF GEOM	1.	MTWTFS			13	
MUS	312			INST CONDUCT	0.5	MTT 5			2	
PHIL	115	2		INT TO PHIL	1.	MWF 5		25	25	
PHIL	212	2		PHIL PERS VALU	1.	TU 4&5		18	18	
PHIL	212	3		PHIL PERS VALU	1.	TH 4&5		4	4	
PEM	002	K		TENNIS	.	MW 5		12	8	
PEM	002	L		TENNIS	.	TT 5		12	6	
PEM	005	X		CHOICE ACTIVITY	.	MW 5		40	17	
PEM	005	Y		CHOICE ACTIVITY	.	TT 5		40	16	
PEW	010	M		TENNIS	.	MW 5		12	13	1
PEW	010	U		TENNIS	.	TT 5		12	12	
PHYS	123		2	COLL PHYS III	1.	MWF 2	TH 4&5		7	
PHYS	133		2	GEN PHYS II	1.	MWF 2	TU 4&5		27	
PHYS	133		3	GEN PHYS II	1.	MWF 2	W 5&6		6	
PHYS	223		1	ELEC INSTRUMENT	0.5	M 5	W 5&6		13	
PHYS	223		2	ELEC INSTRUMENT	0.5	M 5	F 5&6		1	
PHYS	233		1	WAVES	1.	MWF 4	TU 5&6		6	
PHYS	233		2	WAVES	1.	MWF 4	TH 5&6		6	
PS	312			INT LAW & ORG	1.	MWF 5		15	7	

REL	301		JUD CATH PRCT	1.	MWF 5			22
RLSS	103	2	ELEM RLSS	1.	MTWTFS			16
SCC	303		LREAN PRCB	1.	MW5 W7		40	40
SPCH	101		PLB SPEAKING	0.5	MTT 5		20	22
SPCH	341		TH RENAIS-18TH	1.	MWF 5			11

COURSES 881 DEMAND 14 CLOSED

SES MEETING DURING PERIOD 6

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	CL
ART	319	2		CERAMICS I	1.	MWF5&6		20	19	
BIOL	241			NAT HIST VERTE	1.	TW 4		24	23	
BIOL	361			BIOL SEMINAR	0.5	MW 6			11	
CHEM	303			SEMINAR IN CHEM	0.5	TU 6			4	
EDUC	327			SCC ST SEC SCH	0.5	TT 6			12	
EDUC	369	2		HIST & PHIL	0.5	MWF 6		25	20	
FR	103	1		ELEM FRENCH	1.	MTWTF6			25	
GEOL	311			STRUCTUR GEOL	1.	MTWF 6			8	
HIST	106	6		WEST CIV	1.	MTWT 6		32	33	
MS	303	3		JR MIL SCI	0.5	TT 6			6	
MS	313	3		SR MIL SCI	0.5	TT 6			0	
PEW	008	H		BOWLING	.	MW 6		12	12	
PEW		N		SWIM BEG-INTER	.	MW 6		15	12	
PHYS	133		3	GEN PHYS II	1.	MWF 2	W 5&6		6	
PHYS	223		1	ELEC INSTRUMENT	0.5	M 5	W 5&6		13	
PHYS	223		2	ELEC INSTRUMENT	0.5	M 5	F 5&6		1	
PHYS	233		1	WAVES	1.	MWF 4	TU 5&6		6	
PHYS	233		2	WAVES	1.	MWF 4	TH 5&6		6	

COURSES 217 DEMAND 1 CLOSED

SES MEETING DURING PERIOD 7

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME		LAB TIME	MAX SIZE	DEMAND	N CL
ART	450			COMP EXAM	1.	TBA				16	
BIOL	450			COMP EXAM	1.	TBA				23	
ECON	312			COMPUTER APPL	1.	TBA			10	8	
EDUC	317			PE IN ELE SCH	0.5	W	7			18	
EDUC	322			ENG IN SEC SCH	0.5	TU	7			8	
EDUC	324			MATH IN SEC SCH	0.5	TBA				7	
EDUC	325			ART IN SEC SCH	0.5	TBA				1	
EDUC	328			SCI IN SEC SCH	0.5	TBA				3	
EDUC	345			STUD TCH ELEM	1.	TBA				4	
EDUC	346			STUD TCH ELEM	1.	TBA				4	
EDUC	347			STUD TCH ELEM	0.5	TBA				4	
EDUC	365			STUD TCH SEC	1.	TBA				2	
EDUC	366			STUD TCH SEC	1.	TBA				2	
EDUC	450			COMP EXAM	1.	TBA				12	
ENG	311			ADV WRITING	1.	TBA				2	
ENG	450			COMP EXAM	1.	TBA				28	
FR	450			COMP EXAM	1.	TBA				14	
GEOL	450			COMP EXAM	1.	TBA				3	
GERM	450			COMP EXAM	1.	TBA				2	
GRP	122			NON-VIOL DIR	0.5	W	7			51	
GRP	123			TOPICS-MIL HIST	0.5	SAT				5	
HIST	450			COMP EXAM	1.	TBA				24	
MATH	450			COMP EXAM	1.	TBA				13	
MUS	303			COMPOSITION	1.	TBA				1	
PHIL	212	1		PHIL PERS VALU	1.	TH	7		22	23	1
PHIL	330			PROB IN ETHICS	1.	TBA				10	
PHIL	450			COMP EXAM	1.	TBA				1	
PEM		E		WSI MIXED	.	TBA			12	8	
PEM		P		RIFLE MARKS	.	TBA			18	19	1
PEM		Z		INTERCOLL ATHLE	.	TBA				50	
PEM	321			COACH OF FTBL	0.5	TBA				1	
PEM	322			COACH SW&BSBALL	1.	TBA				1	
PEM	324			COACH BBALL	0.5	TBA				2	
PEM	326			ORG&ADM PE&ATH	1.	TBA				2	
PEM	327			CARE & PREVENT	1.0	TBA				7	
PEW		P		SWIMMING WSI	.	TBA			15	15	
PEW		V		PUDDLES	.	TBA				5	
PEW		W		DANCE CLUB	.	TBA				6	
PHYS	312			ADV LAB II	0.5	TBA				1	
PHYS	450			COMP EXAM	1.	TBA				4	
PS	319			ASIAN AFR GOV	1.	TBA			10	8	
PS	354			SEM LEGIS BEHAV	1.	TBA			10	6	
PS	450			COMP EXAM	1.	TBA				27	
PSY	303A			LAB IN MOTIV	0.5	TBA				11	
PSY	315			CLIN PRACTICUM	1.0	TBA				5	
PSY	450			COMP EXAM	1.	TBA				7	
PUBS	450			COMP EXAM	1.	TBA				0	
SOC	450			COMP EXAM	1.	TBA				20	
SPAN	201			INTER SPAN	1.	TBA				1	
SPAN	450			COMP EXAM	1.	TBA				6	
SPCH	291			THEATRE PART	1.	TBA				11	
SPCH	392			THEATRE PART	1.	TBA				2	
SPCH	450			COMP EXAM	1.	TBA				8	
				ACM-ARGONNE	.					1	

ACM-NEWBERRY . 1
FRENCH PROGRAM . 18

COURSES 542 DEMAND 2 CLOSED

KNOX COLLEGE

INTER-OFFICE MEMORANDUM

To Dean Salter
Dean Sanville

Date 3-5-69

From George Melville

Subject Spring enrollment

Attached is a breakdown of close-outs after the second pass, classified by class standing. After the first pass we had 362 students (28%) closed out of 429 classes. After cancelling courses and adding sections we had 293 students closed out of 325 courses. Twenty-two and one-half per cent of the students were closed out of at least one course. Table I shows that most of the close-outs can be accounted for by excess demand for eleven classes upon which enrollment ceilings were placed.

I had presumed that a part of the close-out problem is that teachers prefer to teach and students prefer to take courses at the 2nd, 3rd, and 4th periods. In fact only one student was closed out of a 2nd period class. Of 100 students closed out at period 3, ninety-one are accounted for by three courses.

In my opinion the principal benefits of the new system are (1) it allows us to restructure offerings in mid-enrollment on a sound demand basis; (2) it provides a demand basis for future enrollments.

Undoubtedly there will be dispute on the following point, but I like the fact that this type of enrollment is less biased against freshmen. Though course choice is given less weight in rationing spaces than class standing it becomes quite important where upperclassmen do not list a particular course at all. In the gym system an upperclassmen had the opportunity to change his courses before freshmen, and this frequently meant that freshmen were closed out of freshman courses because of the reshuffling of schedules by upperclassmen. Thus a close-out in one course by an upperclassman could cause a close-out in another course to a freshman. The new enrollment has proved one thing; the gym enrollment could not possibly have worked.

TABLE I

CLASSES CLOSING OUT TEN OR MORE
STUDENTS, SECOND PASS,
SPRING TERM, 1969

Instructor	Class	Number of Students Demand	Number of Students Closed	Class Period
JPA	Psy 111	59	14	1
RFA	Anth 201	84	19	1
HP	Phys 253	88	38	3
VD	Hist 201	57	10	3
JDF	Soc 307	63	43	3
ROM	Eng 223	43	28	4 & 5
FBF	PS 202	54	24	4
JDF	Soc 307	37	17	4
HG	Art 202	39	12	5
ESM	Eng 308	30	10	5
HPH	Soc 303	55	15	5
Total.....			230*	

Source: Computer Center, March 1, 1969

*230 of 325 close-outs (71%)

ADMISSIONS OFFICE — LAKE FOREST COLLEGE — COMPARATIVE REPORT

May 31, 1969

MAIL REPORT 4-30-69 to 5-31-69

	MAY 1969	CUMULATIVE TOTAL SINCE 9-1-68
Requests from High School Juniors	208	324
Requests for Introductory Information		1,797
Freshman Applications Mailed	24	3,737
Transfer Applications Mailed	24	645
Catalogs Mailed	354	19,636
Catalogs - Mailing List	1,502	3,828
Summer School Catalogs Mailed	164	976

ANALYSIS OF APPLICATIONS FOR FALL 1969

FOR THE FALL TERM OF	1967	1968	1969
Resident Freshmen Men	495	506	596
Non-resident Freshmen Men	11	12	23
Resident Freshmen Women	491	584	601
Non-resident Freshmen Women	9	11	9
TOTAL FRESHMEN	1,006	1,113	1,229
Resident Transfer Men	45	37	51
Non-resident Transfer Men	17	20	36
Resident Transfer Women	51	68	89
Non-resident Transfer Women	12	20	21
TOTAL TRANSFERS	125	145	197
TOTAL APPLICATIONS	1,131	1,258	1,426

ANALYSIS OF ADMISSIONS (Freshmen Only) FOR FALL 1969

	Men			Women			Total		
	'67	'68	'69	'67	'68	'69	'67	'68	'69
Rejections	166	168	205	131	254	224	297	422	429
Total Admit	286	342	363	316	339	338	602	681	701
Cancellations	126	161	181	128	174	169	254	335	350
Net Admit	160	181	182	188	165	169	348	346	351
Deposits	124	164	176	169	168	161	293	332	337
Withdrawal	3	3	3	4	3	5	7	6	8
Net Deposits	121	161	173	165	165	156	286	326	329

ADMISSIONS OFFICE LAKE FOREST COLLEGE COMPARATIVE REPORT

May 31, 1969

ANALYSIS OF TRANSFER ADMISSIONS FOR FALL TERM 1969

	MEN		WOMEN		TOTAL	
	'68	'69	'68	'69	'68	'69
Rejections	7	11	3	8	10	19
Admit	26	33	60	67	86	100
Cancellations	3	5	22	25	25	30
Net Admit	23	28	38	42	61	70
Deposits	21	19	34	21	55	40
Withdrawal	0	0	1	0	1	0
Net Deposits	21	19	33	21	54	40

KNOX COLLEGE, June 7, 1969

		TOTALS	MEN	WOMEN
INQUIRIES				
THIS YEAR	TO DATE	6,934*	4,049*	2,885*
LAST YEAR	TO DATE	6,300*	3,335*	2,965*
THIS YEAR	THIS WEEK	43*	27*	16*
LAST YEAR	THIS WEEK	22*	15*	7*
APPLICATIONS				
THIS YEAR	TO DATE	1,055*	641*	414*
LAST YEAR	TO DATE	1,069*	623*	446*
THIS YEAR	THIS WEEK	9*	6*	3*
LAST YEAR	THIS WEEK	4*	2*	2*
ADMISSIONS		ALS BELOW ARE NET AMOUNTS**		
THIS YEAR	TO DATE	539*	315*	224*
LAST YEAR	TO DATE	512*	288*	224*
THIS YEAR	THIS WEEK	4*	4*	*
LAST YEAR	THIS WEEK	13*	6*	7*
DEPOSITS				
THIS YEAR	TO DATE	464*	265*	199*
LAST YEAR	TO DATE	422*	232*	190*
THIS YEAR	THIS WEEK	15*	11*	4*
LAST YEAR	THIS WEEK	5*	2*	3*
SAM				
	THIS YEAR	301*	170*	131*
	LAST YEAR	312*	166*	146*
FRESHMEN				
	THIS YEAR	19*	8*	11*
	LAST YEAR	15*	9*	6*
OTHER				
	THIS YEAR			
	LAST YEAR			

RECOMMENDATION TO CHANGE PASS-FAIL TO SATISFACTORY-UNSATISFACTORY

The accompanying table compares the grades reported for students taking courses on a pass-fail basis with the grades turned in for juniors and seniors at Knox College over the past year.[1] In two respects these distributions are not comparable. On the one hand, the distribution of grades for all juniors and seniors includes the grades for those students who do not have an upperclass C average. It is not unreasonable to assume that these students, who are not eligible for pass-fail, account for a substantial proportion of low grades turned in for juniors and seniors not taking courses pass-fail. On the other hand, juniors-seniors not taking work pass-fail are largely working within the area of their major, while pass-fail students are working in an area other than their major. The significant difference between the distributions exhibited in the table should come as no surprise.

In the current circumstances it is not too much to say that the effective index of grades given by faculty is substantially higher than they believe due to the modification of the index by the pass-fail system. It is also a good bet teachers who see mediocre to poor performances on the part of their juniors and seniors from other departments will come to recognize these students as pass-fail students. If so, one may expect considerable support for a motion to change the pass-fail system into a satisfactory-unsatisfactory system. I recommend that the Academic Status Committee and the Instruction Committee give some joint consideration to the wisdom of such a recommendation.

George Melville
April, 1969

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[1]Only juniors and seniors with at least an upperclass C average were permitted to take a course pass-fail. The contract for a student to take a course pass-fail is between the student and the Registrar, and the instructor is not appraised of the fact that the student is taking the course on a pass-fail basis.

APPENDIX XVIII

PASSED AS PROPOSED.

May 5, 1969

To: Faculty

From: R. O. Davis, Chairman of Instruction Committee
D. W. Sanville, Chairman of Academic Status Committee

The Academic Status Committee and the Instruction Committee will propose the following changes in Faculty Regulations to be voted at the May meeting of the Faculty:

Current Regulation:

C 9. Grades. One of the following grades shall be recorded by the Faculty at the completion of each course: A, B, C, D, for passing work and F for failure. The Faculty will record plus or minus after each passing grade where appropriate: this recording will be placed on the student's permanent record but will in no way affect the student's grade index. The grade I shall be given only at the end of a term in which the student, through no fault of his own, is unable to complete the course with the class. It shall not be given when the work has been neglected. The instructor when reporting a grade of I shall indicate whether or not the student had been doing at least C work. If an incomplete course is not completed within one term of residence after the grade I was given, or if an incomplete course is not completed by a student not in residence within one year after the mark I was given, the grade shall be changed by the Committee on Academic Status to WX if the work had been C or better and to the grade of WF if it had not been C or better.

The mark S (Satisfactory) may be given at the end of a term to indicate that a student has earned the stipulated course credits in a 400 course or in independent senior studies and that a grade will be given at the end of the term when the course project has been completed.

Proposed Changes:

C 9. Grades. One of the following grades shall be recorded by the Faculty at the completion of each course: A, B, C, D, and S for passing work, F for failure, and U for unsatisfactory performance. S and U are grades given for courses taken on a Satisfactory-Unsatisfactory basis and will not be computed in the student's grade index. The grade U is assumed to reflect performance equivalent to that graded D or F. The Faculty will record plus or minus....

The mark I also may be given.... (Academic Status Committee recommendation) [or] The mark P (Passing) may be given.... (Instruction Committee recommendation).

PERCENTAGE DISTRIBUTION OF GRADES TURNED IN FOR STUDENTS TAKING COURSES PASS-FAIL COMPARED TO THE PERCENTAGE DISTRIBUTION OF GRADES TURNED IN FOR STUDENTS TAKING COURSES ON A REGULAR BASIS, JUNIORS AND SENIORS, KNOX COLLEGE, SPRING TERM, 1967-68 TO SPRING TERM, 1968-69

Grade	Per Cent Pass-Fail	Per Cent Regular
A	6.0	25.3
B	29.3	39.8
C	44.2	27.9
D	17.3	5.5
F	3.2	1.5
Totals	100.0	100.0

Source: Office of Institutional Research
Knox College, April, 1969

Current Regulation:

C 9.05 To encourage juniors and seniors to enroll for courses beyond their major field of study, they will be allowed to stipulate for one course a term, for a maximum of four courses, that the grade given will be either Pass or Fail. This privilege may not be exercised by a student with an upperclass average of less than 2.0 and may not be applied to courses offered by the student's Major department nor to other courses used to fulfill requirements for the major nor to courses specifically designed for General Education. Students may not stipulate for a pass-fail course during the term in which they are enrolled for the Comprehensive Examination except on approval of the Dean of the College. Students should indicate at the time of enrollment that they wish to exercise this privilege and will themselves be responsible for making this decision a matter of record with the Registrar's office. The Faculty will be informed of the names of students taking courses on a pass-fail basis only after grade reports have been distributed by the Registrar. Arrangements for altering this special grading procedure cannot be made after the deadline for the changing of courses. In calculating the student's grade index, the Registrar will treat pass credit in the same manner as transfer credit. Questions arising from the administration of this grading policy may be referred to the Committee on Academic Status.

Proposed Changes in C 9.05:

1. Substitution of words "Satisfactory" and "Unsatisfactory" for "Pass" and "Fail" throughout paragraph.

2. Deletion of next-to-last sentence: "In calculating the student's grade index, the Registrar will treat pass credit in the same manner as transfer credit."

3. Addition of following sentence to end of paragraph: "Upon approval of the Instruction Committee, an instructor may offer a course on a Satisfactory-Unsatisfactory basis for all students in the course, and the enrollment in such a course will not limit the eligible student's opportunity to enroll concurrently in another course on a Satisfactory-Unsatisfactory basis."

Current Regulation:

B 1. General Requirements. In order to be recommended for the degree of Bachelor of Arts, a student must have passed 35 courses....

Proposed Changes (Recommendation of Instruction Committee):

B 1. General Requirements. In order to be recommended for the degree of Bachelor of Arts, a student must have enrolled in 35 courses in which he earned the grades of A, B, C, D, or S....

COMPARISON OF THE INDEX OF GRADES REPORTED BY INDIVIDUAL KNOX FACULTY MEMBERS WITH THE INDEX OF GRADES REPORTED FOR EACH FACULTY MEMBER'S STUDENTS BY OTHER INSTRUCTORS, 1968-69

INDICES OF GRADES GIVEN BY KNOX INSTRUCTORS, 1968-69

RUCTOR

A	B	C	D	F	I	TOTAL CREDITS	INSTRUCTOR'S AVE. GRADE	STUDENT'S AVE. GRADE
15	59	67	6	4	0	151.0	2.49	2.44
18	14	31	13	1	3	73.0	2.45	2.81
0	0	0	0	0	0	0.0	0.00	0.00
0	0	0	0	0	0	0.0	0.00	0.00
31	75	130	11	0	0	247.0	2.51	2.61
12	21	85	1	7	0	0.0	0.00	2.57
13	24	22	13	3	0	75.0	2.41	2.76
30	75	76	11	2	0	190.5	2.60	2.64
21	29	44	1	0	1	99.0	2.78	2.83
21	37	53	8	2	0	121.0	2.55	2.72
15	42	36	5	0	0	92.0	2.64	2.61
8	13	6	1	0	0	28.0	3.00	2.61
24	31	46	26	5	0	128.0	2.29	2.39
9	6	4	1	0	0	3.0	3.00	2.68
33	33	32	4	1	1	85.0	2.88	3.01
13	44	62	16	5	0	140.0	2.31	2.71
23	3	5	1	5	0	8.0	3.62	2.34
35	42	41	9	4	1	131.0	2.72	2.70
0	0	0	0	0	0	0.0	0.00	0.00
0	0	0	0	0	0	0.0	0.00	0.00
43	84	17	2	0	2	106.5	3.24	2.81
23	68	50	8	0	1	149.0	2.71	2.66
0	0	0	0	0	0	0.0	0.00	0.00
36	140	91	4	1	1	272.0	2.75	2.64
15	38	18	2	0	0	73.0	2.90	2.57
39	121	75	5	2	2	242.0	2.78	2.42
0	1	0	0	0	0	0.5	3.00	2.89
23	15	22	8	7	0	75.0	2.52	2.68
0	0	0	0	0	0	0.0	0.00	0.00
65	93	65	5	0	0	222.5	2.94	2.88
2	4	2	0	0	0	8.0	3.00	3.04
0	0	0	0	0	0	0.0	0.00	0.00
15	44	29	7	1	0	89.5	2.63	2.54
44	57	17	7	1	0	126.5	3.08	2.80
37	87	121	25	0	5	270.0	2.50	2.51
47	51	77	21	2	1	198.0	2.60	2.62
9	7	0	0	0	0	8.0	3.56	2.62
0	0	3	0	0	0	1.5	2.00	2.34
0	0	0	0	0	0	0.0	0.00	0.00
3	8	1	0	0	0	6.0	3.16	2.54
58	49	8	1	0	0	101.0	3.38	2.71
0	0	0	0	0	0	0.0	0.00	0.00
40	93	82	19	9	1	234.0	2.55	2.54
17	24	10	3	1	0	55.0	2.96	2.77
31	71	66	7	0	0	175.0	2.72	2.72
11	2	0	0	0	0	13.0	3.84	3.09
0	0	0	0	0	0	0.0	0.00	0.00
30	95	71	8	3	0	207.0	2.68	2.66
0	0	0	0	0	0	0.0	0.00	0.00
15	19	16	3	1	0	54.0	2.81	2.76
0	0	0	0	0	0	0.0	0.00	0.00
13	53	79	4	3	0	152.0	2.45	2.54
21	35	47	18	6	1	127.0	2.37	2.56
32	42	31	10	3	0	118.0	2.76	2.73
29	82	75	19	0	5	203.5	2.59	2.52
28	68	81	8	2	1	189.0	2.61	2.67

14	18	2	0	0	0	34.0	3.35	2.87
18	56	63	3	3	0	143.0	2.58	2.60
18	19	4	2	0	0	21.5	3.23	2.65
24	46	48	7	1	3	123.0	2.67	2.53
3	6	1	0	0	0	5.0	3.20	2.91
0	0	0	0	0	0	0.0	0.00	0.00
15	28	2	0	0	0	22.5	3.28	2.73
73	10	6	3	3	0	3.5	3.28	2.17
17	35	38	17	1	0	106.0	2.45	2.49
21	17	8	1	0	0	38.0	3.13	3.09
5	4	3	0	0	0	6.0	3.16	2.81
4	26	26	15	3	0	74.0	2.17	2.65
0	1	0	0	0	0	0.5	3.00	2.78
14	25	54	19	1	0	113.0	2.28	2.45
25	71	39	14	15	2	163.0	2.47	2.60
8	24	16	6	2	0	56.0	2.53	2.81
11	49	48	13	2	2	123.0	2.43	2.60
0	0	0	0	0	0	0.0	0.00	0.00
60	86	31	16	2	0	185.0	2.91	2.73
34	45	38	10	1	2	128.0	2.78	2.63
10	31	46	22	5	1	114.0	2.16	2.45
37	38	60	23	3	0	161.0	2.51	2.53
0	0	0	0	0	0	0.0	0.00	0.00
0	0	0	0	0	0	0.0	0.00	0.00
16	23	34	7	4	0	84.0	2.47	2.74
29	18	27	2	0	0	76.0	2.97	2.94
17	49	45	19	4	0	134.0	2.41	2.50
3	5	3	0	0	0	11.0	3.00	2.64
11	17	11	2	1	0	42.0	2.83	2.69
42	24	2	1	0	0	34.5	3.55	2.57
23	50	36	7	1	4	117.0	2.74	2.64
0	0	0	0	0	0	0.0	0.00	0.00
30	20	4	0	5	0	13.5	3.33	2.46
22	55	95	21	9	0	201.5	2.29	2.48
62	116	92	17	8	5	282.5	2.67	2.58
6	6	11	3	0	0	26.0	2.57	2.93
31	53	59	6	3	0	151.5	2.67	2.61
26	54	20	0	2	1	101.5	2.99	2.61
23	51	85	17	3	1	179.0	2.41	2.76
0	0	0	0	0	0	0.0	0.00	0.00
22	13	10	2	0	0	47.0	3.17	2.77
20	25	14	8	11	0	2.5	4.00	2.37
7	5	2	0	1	0	7.5	3.13	2.98
37	37	34	9	3	0	120.0	2.80	2.65
59	60	15	1	2	1	136.5	3.26	2.81
20	73	70	10	0	1	174.0	2.60	2.68
9	24	13	2	0	0	48.0	2.83	2.76
6	7	2	0	0	0	15.0	3.26	3.27
21	39	48	15	1	0	122.5	2.50	2.69
0	0	0	0	0	0	0.0	0.00	0.00
47	45	22	13	2	0	127.0	2.93	2.63
21	39	27	3	0	2	90.0	2.86	2.67
3	14	3	0	0	0	10.0	3.00	2.76
12	28	51	16	3	2	110.0	2.27	2.33
38	52	29	6	1	8	126.0	2.95	2.54
38	49	44	12	5	0	144.5	2.69	2.70
9	9	18	3	7	0	46.0	2.21	2.40
15	24	3	0	0	0	42.0	3.28	2.62
0	0	0	0	0	0	0.0	0.00	0.00

7	9	13	1	0	1	30.0	2.73	3.01
0	0	0	0	0	0	0.0	0.00	0.00
0	0	0	0	0	0	0.0	0.00	0.00
0	0	0	0	0	0	0.0	0.00	0.00
14	25	37	6	0	0	82.0	2.57	2.61
0	0	0	0	0	0	0.0	0.00	0.00
49	62	47	0	1	0	143.5	2.91	2.76
0	5	1	0	0	0	6.0	2.83	3.02
22	102	56	14	1	2	195.0	2.66	2.50
27	75	48	6	0	1	149.5	2.79	2.54
8	33	2	0	0	1	21.5	3.13	2.56
1	12	20	8	2	1	43.0	2.04	2.42
29	43	23	5	1	0	101.0	2.93	2.70
7	40	42	15	1	0	105.0	2.35	2.45
21	56	56	13	3	0	133.5	2.50	2.43
22	47	20	2	0	0	84.5	2.95	2.63
0	0	0	0	0	0	0.0	0.00	0.00
0	0	0	0	0	0	0.0	0.00	0.00
75	162	206	36	12	4	484.5	2.53	2.68

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
SAMPLE

ADVISER
MR W F PILLSBURY

DATE ENTERED
9 66

NAME

DATE AND PLACE OF BIRTH
DECEMBER 10 1947
CHICAGO ILLINOIS

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
577	644			SPAN 70

NAME AND ADDRESS OF HIGH SCHOOL
SENIOR HIGH SCHOOL
GALESBURG ILLINOIS

HIGH SCHOOL
CLASS RANK 1/10 1/4
49/ 797 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
3.5	0.0	0.0	0.0	0.0	4.0	1.0	1.0	3.5	0.5	0.5	0.0	0.5	1.0	1.0	1.0

	1ST TERM 1966-67				3RD TERM 1968-69		
HIST 104	-2	WEST CIV	1.0 B	ECON 312		COMPUTER APPL	1.0 A
SPAN 210		CONV & COMP	1.0 B	ECON 324		MONEY BANKING	1.0 B
PEM 101		REQ PHYS ED	.0 B	ECON 325		PUB FINANCE	1.0 B+
MATH 151	-1	CALCULUS I	1.0 C	MS 303	-1	JR MIL SCI	.5 A
	2ND TERM 1966-67						
HIST 105	-1	WEST CIV	1.0 A-				
SPAN 202	-2	READ SPAN LIT	1.0 A-				
PEM 102		REQ PHYS ED	.0 A				
MATH 152	-2	CALCULUS II	1.0 B-				
	3RD TERM 1966-67						
HIST 106	-1	WEST CIV	1.0 B				
PEM 103		REQ PHYS ED	.0 B				
ENG 101	-1	FRESHMAN ENG	1.0 C				
PS 201		AM NATL GOVN	1.0 C				
	1ST TERM 1967-68						
ART 103		FORM AND EXP	1.0 A				
ECON 201	-2	PRINCIPLES I	1.0 B				
SOC 201		PRIN OF SOC	1.0 C				
	2ND TERM 1967-68						
ECON 202	-2	PRINCIPLES II	1.0 A-				
ECON 212		COMP EC SYS	1.0 A				
ENG 222	-2	INTRO TO FICT	1.0 B-				
	3RD TERM 1967-68						
ECON 303		STATISTICS	1.0 B-				
ECON 326		INTER TRADE	1.0 C				
HIST 202	-2	AMER HIST	1.0 B-				
	1ST TERM 1968-69						
ECON 221		ACCT PRIN I	1.0 B				
ECON 302		INCOME ANAL	1.0 B-				
CS 101		INT TO COMP SCI	1.0 C				
MS 301	-1	JR MIL SCI	.5 B				
	2ND TERM 1968-69						
ECON 222		ACCT PRIN II	1.0 A-				
ECON 311		BUSINESS LAW	1.0 B				
MS 302	-3	JR MIL SCI	.5 A				
PSY 111	-2	INTRO PSYCH	1.0 C				

REMAINING REQUIREMENTS
SAMPLE

ADVISER
MR W F PILLSBURY

NAME

0.5 TOTAL CREDITS NEEDED, PLUS COMPREHENSIVE EXAM

3.10 UPPERCLASS GRADE INDEX

300 LEVEL COURSES - COMPLETE

MATH PROFICIENCY - COMPLETE

LANGUAGE PROFICIENCY - COMPLETE

SOPHOMORE COMPETENCY - COMPLETE

DISTRIBUTION REQUIREMENTS

HUMANITIES - COMPLETE

HIST 104	-2	WEST CIV	1.0 B
HIST 105	-1	WEST CIV	1.0 A-
SPAN 202	-2	READ SPAN LIT	1.0 A-
ART 103		FORM AND EXP	1.0 A

MATH-SCIENCE

MATH 151	-1	CALCULUS I	1.0 C
MATH 152	-2	CALCULUS II	1.0 B-

1.0 MORE COURSE(S) NEEDED

SOCIAL STUDIES - COMPLETE

HIST 106	-1	WEST CIV	1.0 B
PS 201		AM NATL GOVN	1.0 C
ECON 201	-2	PRINCIPLES I	1.0 B

COURSES TAKEN IN MAJOR AREA - ECONOMICS

ECON 201	-2	PRINCIPLES I	1.0 B
ECON 202	-2	PRINCIPLES II	1.0 A-
ECON 212		COMP EC SYS	1.0 A
ECON 303		STATISTICS	1.0 B-
ECON 326		INTER TRADE	1.0 C
ECON 221		ACCT PRIN I	1.0 B
ECON 302		INCOME ANAL	1.0 B-
ECON 222		ACCT PRIN II	1.0 A-
ECON 311		BUSINESS LAW	1.0 B
ECON 312		COMPUTER APPL	1.0 A
ECON 324		MONEY BANKING	1.0 B
ECON 325		PUB FINANCE	1.0 B+

3.25 AVERAGE IN MAJOR AREA

APPENDIX XXI

COMPREHENSIVE EXAMINATIONS AT KNOX COLLEGE

George Melville, Director
Office of Institutional Research
October, 1969

COMPREHENSIVE EXAMINATIONS AT KNOX COLLEGE

In the spring of 1961 the Knox College faculty changed its regulations to require for graduation the passing of a departmental comprehensive examination. The taking of this examination was stated as a requirement for the class of 1963; its passing a requirement for the class of 1965. In the beginning this examination was seen to be the culmination of a course and/or reading program aiming at the student's achievement of sophistication and synthesis in his major discipline. The comprehensives were offered for credit, essentially substituting for one course in the student's program. Grades in the comprehensives counted as other grades except that D's were not counted in the calculation of the student's major field grade average.[1] To encourage student respect for these examinations, their grades were permitted to influence Summa, Magna and Cum Laude designations as well as the class rank of students receiving these distinctions.

In spite of the fact that some two years in intermittent committee and faculty discussions had been experienced before adoption of the comprehensives, no real agreement as to the meaningfulness of the objectives of a comprehensive program existed among the various departments. The extreme opponents of comprehensives argued that such examinations were a holdover out of a past age; unsuited to current liberalism in education; in the

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[1]It was argued that to have this course count as one of the courses designated as essential to the major would create a kind of double jeopardy for students, some of whom would have to make a C on the comprehensive to graduate. On the other hand, a proposal to allow a C on the comprehensive to stand in lieu of a C average in the major was voted down. These decisions emphasized the comprehensive as a general college requirement, although many departments included the comprehensive as a departmental requirement in their catalogue statement.

process of discard at the better colleges.[2] More importantly, no consensus was evident as to the efficacy of specific programs for achieving the objectives of comprehensives; indeed, there was no common interpretation of the meaningfulness of performance on the examinations themselves.

In the fall of 1966, effective for the class of 1967, the faculty amended its regulations on comprehensives to divorce the comprehensive grade from the student's grade index.[3] Reference to comprehensive programs as courses was dropped from formal usage, though students continued to be credited with the effort of a course equivalent for passing their comprehensive examinations. Honors candidates were permitted to waive the comprehensive as an inducement to their attempting honors programs.[4]

A cursory study of the immediate effects of these changes in regulations concerning comprehensives indicated a fall in student concern and performance on the examinations. It was suspected that "the faculty in its

---

[2]e.g., Dr. Jerome Schiller, Chairman of the Department of Philosophy and Religion at the time.

[3]The grade on the comprehensive examination continued to influence Summa, Magna, and Cum Laude as well as the class rank of graduates so designated.

[4]The number of students receiving departmental honors had fallen from seventeen in 1965 to three in 1966. The threat of the comprehensive was blamed for this fall, and whether the threat was real or excusatory, its removal did find the number of students granted honors increasing over the next three years. Thus: 1967--eight; 1968--thirteen; 1969--seventeen. It was my own understanding that honors candidates faced comprehensive questioning as a part of their oral, and some years ago a candidate for Honors in Economics, Mr. Robert Bennett, was denied the distinction because of his inability to answer questions which, though unrelated to his thesis, were basic to the discipline.

wisdom has succeeded in making a bad situation worse,"[5] and in conclusion noted:

> ...If it becomes generally true that students do little or nothing in preparing for the comprehensive we will have debased the graduation requirement by requiring only thirty-five courses.
>
> It may well be, of course, that the 1967 performance on the comprehensive was merely a first year reaction to a change which will not be repeated. It might help to go through a generation of students with a stable comprehensive program...[6]

This past spring (1969) the Honors and Comprehensives Committee undertook a reevaluation of the comprehensive program, including a review of a survey of student opinion on achievement of objectives for comprehensives.[7] From these deliberations the committee concluded that allowance for credit for passing the examinations was a debasement of graduation requirements in many cases. Consequently, the committee proposed the elimination of credit for the comprehensive.[8] When this recommendation was put before the faculty, it was blocked by a "proposal to amend" in such wise as to eliminate the comprehensive as a general college requirement. This latter motion was tabled to permit additional faculty discussion and consideration.

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[5]Melville, The Pass-Fail System and the Change in the Accounting of Grades on Comprehensive Examinations at Knox College, August, 1967, p 8. This paper was presented at the Proceedings of AACRAO, Philadelphia, Pa., April, 1968.

[6]Ibid p 15.

[7]The questionnaire used by the committee is attached as Appendix I.

[8]See Appendix II.

The purpose of the present paper is to present information relevant to the upcoming faculty decision of comprehensives and to argue a personal viewpoint as to the course of action the faculty should take. The data to be presented support the Honors and Comprehensives Committee's conclusion that we should eliminate the inequities in real graduation requirements which have evolved under our present program. The specifics as to what should be done to rid ourselves of this weakness is the basic point of dispute.

The Grading of Comprehensives

Table I compares the mean index of comprehensive grades for the past four years and the correlation of these grades with students' cumulative indices.[9] The data indicate that the average grade on the comprehensive fell for the two years following the faculty's decision not to count the comprehensive grade in the student's index. At the same time the percentage of variation in students' comprehensive grades which could be associated with variation in cumulative indices fell from thirty-six per cent to approximately twenty-five per cent. "t-tests" run on the differences in grades on comprehensives and on the correlation coefficients were significant to

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[9]A correlation between comprehensive grades and an index of grades in courses required for the major might be more meaningful, but these latter data cannot be readily put together. In the present instance what is being supposed is that some correlation should exist between a student's rank in graduating class and his performance on the comprehensive if he is taking the latter examination seriously. Previous study has indicated that such variables as SAT math and verbal scores, high school class rank and high school rating show substantial correlations with rank in Knox College class, though there is a fair amount of variation in this from department to department.

the .05 level.[10]

Table II indicates that the decline in grades on comprehensives for the years 1967 and 1968 was in upper range of grades. In 1966 about twenty per cent of the grades on comprehensives were A's and about sixty per cent were A's and B's. For the next two years A's on the comprehensives averaged fourteen per cent and A's and B's about fifty per cent.

Last year, however, grades on the comprehensives and their correlation with students' indices rose back to the 1966 level. Hopefully this means that the fall in performance on comprehensives associated with the instability of regulations was a short run phenomenon, the change in regulations having no influence on the sophomores and freshmen of the time.[11]

While performance on comprehensives improved last year, at least as measured by grades, it must be admitted that the situation could hardly have gotten worse. Moreover, performance on these exams is still far from satisfactory in terms of what one would like to expect. If student morale

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[10]This is to say that there is better than a ninety-five per cent chance that the differences in these data reflected real changes in populations as opposed to random variation.

[11]Figures on performance of the Economics and Business Administration comprehensives (which covers economics, accounting and statistical inference) support such a conclusion. In 1967 the percentage of variation in comprehensive scores in this department associated with variation in performance in required courses was thirty-four per cent. The corresponding figure for 1969 was sixty-four per cent. Unfortunately the average grade on the comprehensive for these students in 1969 was quite low (2.10) with the variance relatively high (.73). These figures compare with a mean of 2.55 and variance of .57 on grades for required courses.

and determination were high in regard to comprehensives we might expect the percentage of high grades on these examinations to compare with general senior performances. Table II shows that these two distributions of A and A + B grades are not in the same game, the percentage of these grades for comprehensives being distinctly inferior.

The variance of comprehensive grades in 1969 was .70 compared with a variance of total senior grades of .85. This reflects the small percentage of A's in the former distribution as well as the smaller percentage of F's. Most of the scatter in the grades on comprehensives occurs through the different scoring mechanisms of the various departments. In the last two years no student made a grade lower than C on the comprehensives in the following departments: Biology, Education, Geology, Foreign Languages (all), Music and Physics. In some cases this might have been due to the special efforts of the department, and in some cases it might reflect the small number of majors in a department. The scoring mechanisms in some of these departments, however, do not compare at all with the scoring mechanisms in other departments; e.g., those in the social studies area. This statement is intended neither to praise one nor to damn the other. We are simply not a homogeneous lot in our interpretation of performance on comprehensives, and we have no common commitment to comprehensives. The result is a confusion in the minds of students as to the value of these examinations and as to the amount of time worth devoting to them.

<u>The Honors and Comprehensives Committee: Survey of Student Opinion on Comprehensives</u>

Table IV summarizes the responses of students evaluating the achievement

of the objectives of comprehensive examinations.[12] While the range of opinion as to the effective achievement of objectives ran from virtually perfect achievement to zero achievement, the predominate opinion of these students was towards substantial under-achievement. Twenty-six respondents indicated they prepared significantly less for these examinations than was the case in regular courses. Some students claimed that total preparation for comprehensives was to be compared with preparation for the average final examination. An occasional student apparently does not prepare for comprehensives at all. In answer to a specific question, twenty-two of the thirty-six students said they would not do less work on the comprehensives if no credit were allowed for the experience; several of these students indicated their response meant they had done little or no work for credit.

Even those students who felt that at least some of the objectives were achieved did not agree on the amount of work required of them in the achievement. For example, ten of the thirty-six respondents indicated that their preparation for comprehensives involved substantially different organizational patterns and thinking processes than those associated with other courses. (Ten students gave a "1" rating to question "c".) Of these students, only five admitted doing as much work for comprehensives as they did in other courses. The fractions of "regular" course time the remaining five

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[12]It must be recognized that the number of responses to the committee's questionnaire was small (thirty-six) and that these returns cannot be regarded as random. Conclusions generalized to all seniors from these responses can be only tentative unless related to other specific information. Having made this bow to the gods of chance, I must confess I found the thirty-six responses enlightening.

students indicated they spent on comprehensives form the following array: 3/4, ½, ½, ¼, "hardly any".

The responses from this questionnaire reinforce my impression of the general student image of comprehensives. Informal conversation with students has led me to the conclusion that many students see these examinations as a threat lacking in dignity; something not altogether real; at one extreme, a farce. I support the Honors and Comprehensives Committee's proposal to reinstitute a thirty-six course requirement independent of comprehensives. I commend the committee for its integrity in opening "a bad can of worms."

When one considers the maturity, discipline and learning preparation achieved by students as they progress through college, one might expect the senior year to be the most meaningful to students in terms of accomplishments. To have the seriousness of study in the senior year blighted as it has been by comprehensives is not only waste, but waste with the worst possible multiple in terms of what the student might have learned. Furthermore, one fears that weakness may generate weakness; that the senior year may become thought of as playtime to many students--a time, for example, substantially filled with lower level courses.[13]

The Problem

For the above and other reasons (e.g., respect for the Honors and Comprehensives Committee, Dean Salter's eloquence, the general faculty impressions

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[13]Table III shows a breakdown of 1968-69 courses taken by seniors classified by major field and level. Pass-fail enrollment is also shown. Enrollment pass-fail by seniors fell sharply last year after restrictions were imposed (limit to four courses, none in the term of the comprehensive, etc.) I am indebted to Mr. William Ripperger for the data in this table.

of comprehensives, etc.), I have no doubt that the faculty will support the move to return to a thirty-six course requirement independent of comprehensives. Some substantial sympathy for adding the comprehensives to the thirty-six course requirement, which is the committee's actual recommendation, will be felt and expressed; precisely because the comprehensive as an added requirement should add effort and dignity to the student's senior year program.

The problem arises from the fact that we cannot create additional graduation requirements ex post facto for the current student body, meaning that the new regulation would not become effective until the class of 1974. Undoubtedly many students would take a thirty-sixth course as a non-chargeable option. Some fair number, however, will simply follow the new graduation accounting statement which will be given to them each term, a statement based on a requirement of thirty-five courses plus comprehensives. In the absence of any real community feeling for comprehensives on the part of students and on the part of faculty--if such a community feeling exists I certainly do not sense it--I feel that to preserve the comprehensive as a general graduation requirement will involve prolonging the debasement of graduation requirements for another four years.

If there is one thing that has been taught by the Knox College experience with comprehensives, it is that the faculty cannot legislate commitment to programs standing over from the heralded traditions of other institutions. If we had succeeded in commanding such commitments from the various departments we would not now be quibbling about the credit involved for the program. Indeed, if the commitment had existed, we might now be arguing that

half to full time in the student's senior year should be devoted to preparation for comprehensives. Think of that.

If the faculty passes a proposal to write the comprehensive out as a general college requirement, we can require of all current students thirty-six courses for graduation. In restating the graduation requirement from thirty-six courses including comprehensives to thirty-five courses plus comprehensives the faculty intended to exclude grades on comprehensives from calculation in students' indices and to affirm that programs culminating in the comprehensive examination need not take the form of a course. Nevertheless, no intention to debase graduation requirements existed and the effort on comprehensives was presumed to equate to that of one unit courses. Furthermore one unit of credit has always appeared on the student's record for passing the comprehensive.[14] I have talked to a number of students, all of whom thought that a thirty-six course requirement was to be expected if comprehensives were eliminated. Thus, elimination of comprehensives would not reduce total credit required of students anymore than, say, the elimination of freshman English as a requirement has reduced total credit demanded of students.

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[14]Carl Eisemann, Chairman of the Education Department, was quick to point out the need for appearance of credit for the comprehensive on the records of students obtaining teacher's certificates. Larry DeMott, Chairman of the Geology Department, made a motion in a faculty meeting to restate the requirement of comprehensives in such wise as to allow credit to appear on the student's record. He withdrew the motion when informed that credit always had appeared on the students' records, the proper accounting of the grades being programmed through the computer.

Salvaging the Comprehensive

Having stated my position on the motions on comprehensives facing the faculty, I will offer a personal observation in regards to these examinations. The comprehensive examination at Knox College has not been a total failure. Some success has been achieved in individual departments making serious commitment to the program. I believe their success has been undermined by the lack of commitment in other departments; by the resulting confusion in the minds of students, many of whom did not know whether or not the examination should be taken seriously, many of whom doubted if the faculty really knew what the hell it was doing.

It is my belief that, if current statements on comprehensives are voted out, we should write into the faculty regulations a statement encouraging individual departments to make a commitment to a program which would incorporate the general objectives of a comprehensive. I would propose that the amount of credit, or lack of it, be a matter to be worked out between the department and the Instruction Committee. The nature of the individual program, the maintenance of morale in the program, and the evolution of the program would be the concern of the individual department and its students. These programs would be stated as departmental requirements, effective as early as 1972. They might be offered on a regular grade basis with the grade counted as in regularly required courses. This would be left up to the respective departments.

Departments unwilling to make such a commitment would not do so. Very good departments may have very good and sound reasons against anything

resembling a comprehensive program. To legislate a commitment of them would be an illusion; an act entirely divorcing the faculty from Melville's Twelfth Law: Never stake your promises of paradise on the legislation of atheists into heaven.

TABLE I

CORRELATION OF COMPREHENSIVE GRADES WITH CUMULATIVE INDICES, CLASSIFIED BY GRADUATING CLASS, 1966-69

	1966	1967	1968	1969
Mean Cumulative Index	2.77	2.60	2.66	2.74
Mean Index of Comprehensive Grades	2.78	2.60	2.52	2.72
Variance of Comprehensive Grades	.70	.57	.73	.70
r^2 *	.36	.25	.24	.36

Source: Office of Institutional Research
October, 1969

*Proportion of variation in grades associated with variation in cumulative indices.

TABLE II

PERCENTAGE OF A AND A+B GRADES MADE ON COMPREHENSIVE EXAMS* AND IN ALL COURSES TAKEN BY SENIORS,** 1965-66 THROUGH 1968-69

Year	All Senior Grades		Comprehensive Grades	
	A	A+B	A	A+B
1965-66	27.9	67.3	20.1	59.4
1966-67	29.6	72.9	14.2	52.7
1967-68	27.1	66.7	14.0	46.8
1968-69	***	***	18.2	60.6

Source: Office of Institutional Research
October, 1969

*Each student awarded Departmental Honors was assigned a grade of A on the Comprehensive.

**Includes actual comprehensive grades and Honors grades.

TABLE III

COURSES TAKEN BY SENIORS CLASSIFIED BY MAJOR FIELD AND LEVEL AND COURSES TAKEN PASS-FAIL, SENIORS, 1968-69

Major Field	Courses Taken in Major	Courses Outside Major 300 Level*	Courses Outside Major 100-200 Level	Number Pass-Fail
Amer. Studies	4.0	10.5	4.0	2.0
Art	103.0	22.5	22.0	8.5
Biology	102.5	61.0	74.0	30.0
Chemistry	54.0	20.0	33.5	9.5
Economics	123.0	31.0	44.5	13.5
Education	78.0	25.5	25.5	9.5
English	146.5	69.5	34.5	16.0
French	27.0	29.0	14.0	7.0
Geology	11.0	8.0	12.0	2.0
German	9.0	7.5	2.0	0.0
History	101.0	75.5	59.0	16.0
Mathematics	77.0	25.5	36.0	16.0
Music	9.0	4.5	4.0	3.0
Philosophy	7.0	8.0	2.0	2.0
Physics	24.5	11.0	7.0	2.0
Political Science	154.0	65.5	56.5	16.5
Psychology	40.0	21.5	17.0	9.5
Sociology	85.0	65.0	27.0	13.0
Spanish	20.0	34.5	6.0	2.0
Speech	45.0	23.0	12.5	6.0

Source: Computer Center, October, 1969

*Includes 200 level languages and most 200 level sciences.

TABLE IV

FREQUENCY DISTRIBUTION OF RATINGS OF ACHIEVEMENT OF OBJECTIVES FOR COMPREHENSIVES, THIRTY-SIX SENIORS ANSWERING QUESTIONNAIRE, SPRING, 1969

Statement of Objective*	Rated Opinions** 1	2	3	4
A	8	17	8	3
B	9	10	12	5
C	10	5	11	10
D	6	8	14	8

Source: Dean Lewis S. Salter, Senior Questionnaire on Comprehensive Examination, Spring, 1969

*A. "The Comprehensive Exam tests the student's competency in his major field." 1 2 3 4

B. "The Comprehensive Examination should be an incentive to the student to bring together into an integrated whole the knowledge acquired in his major field." 1 2 3 4

C. "The chief value of Comps rests in the process of preparing for the examination: studying for a genuine Comprehensive Examination is quite a different task than that of studying for even a final examination in some specific course. The student must organize and think through a large body of material, brought together from various courses and diverse readings, in such a way that he can 'see the whole'. Cramming, for example, will be totally inadequate as a mode of preparation." 1 2 3 4

D. "The experience of actually taking Comps can itself bring about integration and correlation. Both written examinations and oral examinations have stimulated the perception of new connections and can thus constitute a true learning experience." 1 2 3 4

**1 - objective substantially achieved;
2 - objective only partially or weakly achieved;
3 - no correlation between my experience and the stated objective;
4 - negative correlation--my experience furthered the opposite of the stated objective.

App. XXI

SENIOR QUESTIONNAIRE ON COMPREHENSIVE EXAMINATION

Major department: French

Name (optional): _____

The Committee on Honors and Comprehensives is carrying out a general assessment of the Comprehensive Exam program at Knox College. It would materially help us if you could take a few minutes and complete the following questionnaire. PLEASE BRING THE COMPLETED QUESTIONNAIRE WITH YOU TO THE COMMENCEMENT REHEARSAL SATURDAY MORNING, JUNE 14, AT 10:00.

I. The following statements articulate in various ways the objectives which the Knox faculty seek to achieve through the Comprehensive Exams. Please evaluate each statement, in the light of your experience this year, by circling that number which is most appropriate. Coding is as follows:

1 - Objective substantially achieved;
2 - objective only partially or weakly achieved;
3 - no correlation between my experience and the stated objective;
4 - negative correlation--my experience furthered the <u>opposite</u> of the stated objective.

a. "The Comprehensive Exam tests the student's competency in his major field." 1 2 (3) 4

b. "The Comprehensive Examination should be an incentive to the student to bring together into an integrated whole the knowledge acquired in his major field." (1) 2 3 4

c. "The chief value of Comps rests in the process of preparing for the examination: studying for a genuine Comprehensive Examination is quite a different task than that of studying for even a final examination in some specific course. The student must organize and think through a large body of material, brought together from various courses and diverse readings, in such a way that he can 'see the whole'. Cramming, for example, will be totally inadequate as a mode of preparation." 1 (2) 3 4

d. "The experience of actually taking Comps can itself bring about integration and correlation. Both written examinations and oral examinations have stimulated the perception of new connections and can thus constitute a true learning experience." (1) 2 3 4

II. Assuming that the ideal of Comprehensive Exams is worthwhile, comment critically on any or all of the above stated objectives and add any other objectives that seem valid to you.

III. The present graduation requirement consists of 35 courses plus the Comprehensive Examination; by implication, the Comprehensive Examination has replaced one full course. Would your Knox educational experience have been richer if you could have taken a 36th course in place of Comprehensives? Yes (No)

IV. Did you put as much time in on preparation for Comps as you would have for a regular course? (Yes) No

If your answer is "no", indicate roughly the appropriate fraction of time (e.g., one-half, one-quarter).

V. Some departments experimented this year with a format which deviated from the traditional Graduate Record Examination plus written examination pattern (e.g., Biology, Political Science, Sociology). If you participated in such an experiment, do you feel it was a success? Yes No

If you participated in a more conventional Comprehensive Exam, do you feel that it could profitably have been modified? (Yes) No

How? By cutting down the list of books we were required to read. There were too many superfluous authors

VI. Suppose the graduation requirement consisted of "36 courses plus the Comprehensive Exam". Would this have the effect of "devaluing" the Comprehensive Examination experience? (Yes) No

Would you have devoted any less time and energy in preparation for Comps in this circumstance? (Yes) No

VII. The Committee on Honors and Comps would be grateful for any general comments or evaluation which you would care to give on the educational value of Comprehensive Examinations.

The French comps course should be worth 3 credits. There is too much work to do for one course in one semester. It should be continued over the year

Thank you very much for your cooperation.

Lewis S. Salter

App. XXI

October 6, 1969

To: The Faculty

Subject: Changes in Faculty Regulations to be Proposed by the Committee on Honors and Comprehensives at the next Regular Faculty Meeting

The Committee on Honors and Comprehensives intends to present two substantive changes in the Faculty Regulations at the October meeting, one pertaining to the Honors Program and the other pertaining to the Comprehensive Examination.

Regulation B 5.2 concerns the eligibility of students for the Honors Program. The first sentence now reads, "A student who is to be accepted as a candidate for Honors must have a grade index of no less than 3.25 for all courses taken since the conclusion of the freshman year." The Committee moves that this sentence be amended to read as follows: "A student who is to be accepted as a candidate for Honors must have the endorsement of his major department."

The second change which we propose involves a change in the graduation requirement. In brief, we propose that the graduation requirement be changed to 36 term courses plus the Comprehensive Examination. To achieve this, the following editorial amendments must be made: B 1., line 2, change "35" to "36". B 1.1, line 1, change "35" to "36"; line 5, change "35" to "36". B 1.2, line 1, change "35" to "36". B 5.2, delete the sentence: "A student exempted from the Comprehensive Examination for the reasons stated above will be required to earn 36 courses for graduation."

The rationale for the first change is simple: the Committee feels that some (though not many) students who were quite capable of profiting from the Honors Program in the past have been barred from participation by the 3.25 GPA restriction. In most cases the gap was small; in at least one case, the student could have participated if freshman year grades had been included in figuring the GPA. This is, after all, a departmental Honors program and we think it best to put the responsibility of screening Honors applicants squarely on the departments, with as few general restrictions as possible.

The second change which we propose stems from our observation that there is considerable unevenness and even inequity arising from present departmental modes of administering the Comprehensive Examination. The most serious problems seem to arise from the difference between treating Comprehensives as a course, as opposed to a graduation requirement which takes the form of a special examination. The key sentence in the existing guidelines (page 59 of the Faculty Handbook) is the

following: "The Comprehensive Examination for the purpose of defining a student's status will count as a course, which means that during the term in which he carries two courses and is preparing to take the Comprehensive Examination he is carrying a full academic load." Some departments have developed praiseworthy courses which are organically linked with the Examination itself; in these departments the student, in effect, is completing 36 term courses. In other departments, there is little or no course work associated with the Comprehensive Examination, which is simply administered at the appropriate time. The student is presumed to be using the "released time" in preparation for the Examination. In this situation the student is effectively completing 35 courses (plus the Comprehensive Examination) but is charged for 36 courses. As increasing numbers of students complete their course work at Knox in the fall and winter terms of the senior year, administrative difficulties will increase.

Our recommendation revokes (albeit with some regret) the interpretation of Comps as a course; we urge the separation of the Exam itself from the formal course structure of the departments. We remain firmly convinced that the Comprehensive Examination has real educational value as a stimulant to the senior to achieve an overview of his major field, as an aid to his perception of its intrinsic "shape" apart from the artificial structure imposed by the arbitrary division of a subject into a sequence of courses. If the Exam is maintained as a separate requirement for graduation, distinct from the 36 term courses required for graduation, it can stand on its own feet as a challenge to and a learning experience for our students; departments may feel freer to experiment with forms of the examination particularly suited to their discipline, and inequities in tuition charges to different students will be eliminated.

Needless to say, if the proposed changes in Faculty Regulations concerning the Comprehensive Examination are approved, the appropriate section of the Faculty Handbook dealing with policies and procedures for the Examination (pages 58-63) would need to be extensively revised. The Honors and Comps Committee will gladly undertake this revision.

Lewis S. Salter, Chairman
Committee on Honors and Comprehensives

LSS:pm

APPENDIX XXII

ANALYSIS OF FACULTY AND STUDENT RESPONSE TO THE QUESTIONNAIRE ON COMPREHENSIVES

George L. Melville
Office of Institutional Research
November, 1969

Procedure:

A questionnaire relating to the achievement of the objectives of comprehensives and to conjectures as to why students do not perform adequately on comprehensives was submitted to students and faculty by the Honors and Comprehensives Committee. A random sample of 100 juniors and seniors, stratified by departments, received the questionnaire. The entire faculty received the questionnaire. Forty-five students and fifty-eight faculty responded. I believe these samples are representative of student-faculty opinions on comprehensives.

Summary Statements

The Objectives

1) Many faculty believe the comprehensive given in their department effectively tests the student's competence in the field. About as many more faculty admit their examinations leave something to be desired, but relatively few faculty believe their examinations do not test student competence.

Very few students believe the examinations adequately test competence in the major. While most students agree that the exams are half way successful in this direction, a large percentage believes the exams are not effective.

The difference in student and faculty responses is significance far beyond the .01 level. Grouping the student responses, chi-square = $30.3 > 9.2$ (n = 2)

2) On the question of the incentive the comprehensive gives the student to integrate the knowledge acquired in his field, the faculty is divided. Student opinion, however, is on the side denying that an effective incentive exists. The difference in faculty and student responses is significant to the .05 level. Chi square = $6.51 > 5.99$ (n = 2)

3) Faculty and students tend to agree that preparation for comps does not involve the bringing together of diverse materials so as to achieve an integrated overview of the field. The difference in the responses was not significant. Chi square = $1.76 < 5.99$ (n = 2)

4) A substantial percentage of faculty believes that preparation for comps stimulates the student's perception of new connections and constitutes an important learning experience. Few students believe this. The difference in responses is significant to the .01 level. Chi square = $14.8 > 9.2$ (n = 2)

General conclusion: These data support the Salter suspicion that many departments do not know what they're about in the construction of a comprehensive examination.

Credit for Comprehensives

A diversity of opinion exists among students and faculty on the question of the credit which should be allowed for comprehensives. The difference between faculty and student responses on this question was very small. Chi square = .15 5.99 (n = 2)

Can a viable program of comprehensives be achieved?

Eighty-four per cent of the faculty responding to this question indicated they believed a viable program for comprehensives could be achieved in their departments. On the other hand, twelve of the fifty-eight faculty who answered the questionnaire overlooked this question (probably because it was preceded by a question marked "students only").

A small percentage of the faculty does not believe in comprehensives and undoubtedly would like to be rid of the program in their department.

Amount of study in preparation for comprehensives

Students are divided on the question of the amount of study they expect to do for comprehensives. On the other hand, they seem to agree that in the past many students studied little for comprehensives.

Conjectures as to why student effort and performance on comprehensives is inadequate

Both students and faculty predominately expressed strong to mild agreement with the conjectures made. On the first four statements agreements outnumbered disagreement 346 to 21. On the final question, relating to the claim that the inadequacy in the comprehensive programs of some departments undermines the programs of other departments, there was some substantial disagreement. Agreements outnumbered disagreements 63 to 22, there being as much disagreement with this one conjecture as with the other four combined.

DISTRIBUTION OF RESPONSES TO QUESTIONNAIRE
ON COMPREHENSIVES CLASSIFIED BY STATUS
NOVEMBER, 1969

As to the Objectives of Comprehensives

Recent comprehensive exams have tested the student's competency in his major.

Response	Faculty	Seniors	Juniors
true	27	0	2
half true	25	15	9
untrue	3	8	6
no opinion	3	2	3

The comprehensive is an effective incentive to the student to bring together into an integrated whole the knowledge acquired in his field.

true	19	3	3
half true	20	8	7
untrue	16	13	8
no opinion	3	1	2

In preparing for comprehensives students organize and think through a large body of material brought together from various courses and diverse readings, achieving sophisticated overview of the field.

true	10	3	2
half true	28	11	8
untrue	17	10	8
no opinion	3	1	2

Preparation for comprehensives stimulates the student's perception of new connections, thus constituting an important learning experience.

true	21	0	3
half true	22	9	8
untrue	12	12	8
no opinion	3	4	1

As to the Amount of Credit* that Should be Allowed for Comprehensives.

one credit	20	10	4
depends on field	19	6	10
no credit	15	7	4
no opinion	4	1	2

*One student and no faculty answered one-half credit.

As to the Amount of Preparation for Comprehensives (students only)

I expect to study a considerable amount of time for the comprehensive.

Response	Faculty	Seniors	Juniors
true		7	6
half true		6	7
untrue		4	5
no opinion		8	2

In the past most students have not studied any considerable time for comprehensives

true		8	2
half true		11	11
untrue		3	2
no opinion		3	5

As to the belief that a viable program can be worked out in the department of the respondent. (faculty only)

true	39
half true	1
untrue	5
no opinion	1
no response	12

As to conjectures why Knox student effort and performance of comprehensives is inadequate.

Many departments have made no real commitment to a program of student preparation culminating in an evaluation of the student's achievement of sophistication and synthesis in his major field.

strongly agree	19	10	9
mildly agree	23	5	9
mildly disagree	3	4	1
strongly disagree	0	0	0
no opinion	13	6	1

No agreement exists between departments as to the efficacy of the examinations themselves.

strongly agree	34	12	13
mildly agree	18	9	5
mildly disagree	1	1	0
strongly disagree	1	0	0
no opinion	4	3	2

There is no common interpretation among departments as to the meaningfulness of performance on the examination themselves.

Response	Faculty	Seniors	Juniors
strongly agree	35	12	13
mildly agree	17	10	6
mildly disagree	3	0	1
strongly disagree	0	1	0
no opinion	3	2	0

The lack of community feeling for comprehensives has resulted in apprehension among the students as to the validity of the examinations.

strongly agree	30	13	13
mildly agree	18	8	5
mildly disagree	3	1	0
strongly disagree	0	1	0
no opinion	7	2	2

The resulting impression of many students that comprehensive examinations are not to be taken seriously has undermined the success of departments who have made serious commitment to the program.

strongly agree	21	7	6
mildly agree	18	4	7
mildly disagree	8	9	1
strongly disagree	2	1	1
no opinion	9	4	5

November, 1969

APPENDIX

JUNIOR AND SENIOR QUESTIONNAIRE ON COMPREHENSIVES

To help prepare a recommendation on the general question of comprehensive examinations, the Honors and Comprehensives Committee needs expressions of faculty and student opinions on certain key questions. Would you please complete the following brief questionnaire and return it to the box provided in the mailroom at your earliest convenience?

Lewis S. Salter, Dean of the College

Indicate your response by checking the appropriate spaces provided.

I. Respondent's Classification

_____Junior _____Senior _____Faculty

II. Indicate your impression as to the extent to which the objectives of comprehensives have been achieved in your department.

a. Recent comprehensive exams have tested the student's competency in his major.

_____true _____untrue _____half true _____no opinion

b. The comprehensive is an effective incentive to the student to bring together into an integrated whole the knowledge acquired in his major field.

_____true _____untrue _____half true _____no opinion

c. In preparing for comprehensives students organize and think through a large body of material brought together from various courses and diverse readings, achieving a sophisticated overview of the field.

_____true _____untrue _____half true _____no opinion

d. Preparation for comprehensives stimulates the student's perception of new connections, thus constituting an important learning experience.

_____true _____untrue _____half true _____no opinion

III. How much credit should be allowed for comprehensives?

____no credit ____half credit ____one credit ____amount of credit depends on the field

IV. (Students only)

a. I expect to study a considerable amount of time for the comprehensive.

_____true _____untrue _____half true _____no opinion

b. In the past most students have not studied any considerable time for comps.

_____true _____untrue _____half true _____no opinion

V. (Faculty only) I believe a viable program for comprehensives can be achieved in my department.

_____true _____untrue _____half true _____no opinion

VI. The following interrelated conjectures have been made as to why Knox student effort and performance on comprehensives is inadequate. Please indicate your own assessment of these factors by checking the appropriate response:

(1) Many departments have made no real commitment to a program of student preparation culminating in an evaluation of the student's achievement of sophistication and synthesis in the major field.

Strongly agree_____; mildly agree_____; no opinion_____; mildly disagree_____; strongly disagree_____.

(2) No agreement exists between departments as to the efficacy of specific programs for achieving the objectives of the comprehensives.

Strongly agree_____; mildly agree_____; no opinion_____; mildly disagree_____; strongly disagree_____.

(3) There is no common interpretation among departments as to the meaningfulness of performance on the examinations themselves.

Strongly agree_____; mildly agree_____; no opinion_____; mildly disagree_____; strongly disagree_____.

(4) The lack of community feeling for comprehensives among the faculty has resulted in apprehension among students as to the validity of the examinations.

Strongly agree_____; mildly agree_____; no opinion_____; mildly disagree_____; strongly disagree_____.

(5) The resulting impression of many students that comprehensive examinations are not to be taken seriously has undermined the success of departments who have made serious commitment to the program.

Strongly agree_____; mildly agree_____; no opinion_____; mildly disagree_____; strongly disagree_____.

APPENDIX XXIII

GENERAL EDUCATION AT KNOX COLLEGE

George Melville
November, 1969

The Knox College faculty regulations concerning general education requirements, currently being evaluated by the Instruction Committee, were largely adopted in the spring of 1962 effective for students entering that fall. Subsequent modifications of the 1962 regulations include the dropping of the Speech, History, and English proficiency requirements and the adding of the sophomore competency requirement in Mathematics or Modern Languages.

The purposes of associating the achievement of a "liberal" education with the earning of a Bachelor of Arts degree are expressed most frequently in general terms. A common idea is that, in addition to being well disciplined in his own field, the holder of an AB degree should have had contact with the way in which people in a variety of fields think; with the kinds of problems and the approach to problems one finds in various disciplines. It is believed that in judging the arguments of the day, such an education improves the individual's chances of being able to discriminate between propaganda and documented fact; between that which is slick, esoteric, or jargonized and that which can be said for a certainty or properly qualified. He should "value originality and shun that which is trite and hackneyed." He should "achieve self confidence tempered with humility." Hopefully the AB holder will feel some conviction in judging whether his confusion on an issue rests with the inadequacy of presentation of the subject to him or with his own limitations. He should "know what is being said, and how well it is being said."

And in the Age of Aquarius he will care.

While no one supposes that such an individual can be manufactured by any set of programs, I would be less than candid if I did not admit feeling strongly that programs with contrived general education courses, apart from their heuristic value and the talents of very special teachers, give away considerable weight in the struggle. I make this statement not as an attack upon our General Education courses, some of which are excellent, but to make the extent of my bias clear. I favor stronger controls over the distribution of course work in the AB degree program; something like twelve to eighteen courses required outside the area of the major rather than the six to thirteen we now require.

There is of course no chance at all that such an old fashioned view as I have expressed will prevail; not at the present time. Nonetheless, the thought is not idle. If one feels that the existing degree program at Knox College does not turn out a large percentage of individuals of the type described above--which is common gossip--there is considerably more tradition on the side of increasing the degree requirements than there is on the side of doing away with requirements.

Consider the circumstances which prevailed before the current regulations were put into effect. The following is taken from the 1961-62 catalogue statement on General Education:

> Through its General Education program, Knox College undertakes to help the individual develop further those understandings and skills which appear to be most essential in a democratic society. This requires selecting from a long tradition and from a rapidly enlarging body of more recent knowledge those ideas, concepts, insights, and methods of communication of the broadest utility and greatest personal, moral and social significance.

> The Knox General Education program is flexible and varied, and can thus meet the differing needs of individual students. The specific courses are determined by the Academic Counselor in conference with the individual student and on the basis of an analysis of the student's educational background and experience and his achievement on the examinations given at entrance.

The actual power of the counselor was never as real as the word given in the catalogue except in the case where the student had failed to exempt out of an area through entrance examinations. Achievement tests were given entering students in the areas of English, mathematics, foreign languages, history, social studies, humanities, and science. The exemption scores on these tests were supposedly based on sophomore norms established in 1955. (Sometimes they were based on the number of faculty available to teach beginning courses.) A student scoring at the sixtieth percentile was thus supposed to be as proficient in an area as sixty per cent of the sophomores. The whole scheme became suspect when it turned out that year after year well over half the freshmen were exempting out of some areas. (particularly science and social studies) Many students exempted out of everything. Students who did not achieve the exemption score on the various areas were required to take one to two courses in those areas.

Only about one-third of the entering students were able to exempt out of the area of Humanities by examination. The Knox graduate who did exempt out of humanities almost invariably took several courses in humanities even though he was not required to do so. A large percentage of students majoring in science, mathematics and humanities were able to exempt out of social studies. Of these, a substantial percentage did not take courses in social

studies. Similarly, a large percentage of students majoring in social studies and humanities were able to exempt out of science and mathematics. Of these, the vast majority absolutely refused to take courses in science or mathematics. Somewhat paradoxically the highest paid sector of the teaching community was carrying the smallest share of the teaching load.

Many students were receiving an AB degree without having had a course in social studies either in high school or in college. Many students were receiving the degree without ever having come in contact with a laboratory of any kind, either in high school or in college. Thanks to a tough achievement test on entrance most all of our graduates had had courses in humanities.

The view that this unhappy state of things could be changed by doing away with all General Education requirements would have seemed ludicrous to the faculty at that time. The reaction was in fact the opposite; we moved to strengthen the requirements. I believe the Instruction Committee, under Harry Neumiller's chairmanship, worked more than a year preparing its recommendations. While the program passed in 1962 did not go as far as some of us would have liked, I felt it was infinitely superior to the program we had. I took my half loaf, and I have no intention of giving it back.

The observations I have made above relating to the distribution of courses taken outside the area of the major under the conditions existing before the current regulations went into effect are documented in an appendaged study, The Distribution of Courses Taken by 1963 Graduates. While the character of our entering class may have changed since that time, one cannot prove it by a comparison of entering class profiles. It is my belief that the data in the

1963 study give a clear indication of what we may expect to happen if we do away with all requirements.

The principal impact will be a sharp reduction in the percentage of students taking science courses. Indeed, about the time we get the new science building completed we may find ourselves with little need for it. We are adding a third man in Geology. Next year, if we do away with distribution requirements our geologists will shortly be demanding a fourth man--for bridge. If less than sixty per cent of our current science standard was satisfied in the days when half the students were exempt from it, we may expect less than thirty per cent of the current standard to be satisfied with all students exempt from it. This statement may be optimistic, but even if it proved to be subtantially pessimistic we could still have a considerable problem.

Corresponding to the decline in the demand for science courses, the demand for courses in history, sociology, psychology, economics, and political science will increase. This prospect will be something less than exciting to teachers in these areas, many of whom are already overburdened. While theoretically teachers could be added and courses could be revised to establish reinforcement patterns more suitable to larger classes, some genuine fear of a deterioration in teaching effectiveness in these areas should be felt.

I wish my position to be clear. I believe the effect of doing away with distribution requirements on the educational development of students would be tragic. That is my primary concern. I further believe that the educational development of students is affected by the efficiency with which an institution

uses its teaching personnel. The thought of overburdening some very fine teachers in the face of a declining use of some of our best teachers, all in the name of improving our educational situation, is more than I can stand.

I do not wish to imply that those people advocating doing away with distribution requirements have nothing meaningful to say on their side of the issue. There is some truth in their claims as to wasted motion in classes taken by students not interested in the subject, just as there is some truth on the side of the argument that students can become interested in areas they would have liked to avoid. It also may be true that we are graduating a large percentage of students who will never be mistaken for the type of educated person described above. How this situation is to be avoided by doing away with distribution requirements escapes me. Whenever I have it explained to me, I usually get the feeling that if we never get around to the ideal-type educational community the advocates have in mind we will have missed something. I also feel that the conditions requisite to such a community, particularly the conditions associated with student motivation, adviser motivation, and proficiency in advising, are not present here. Certainly the evidence we have argues this: if an important object of our program is to broaden the education of the student, it will not be accomplished by doing away with distribution requirements; if our educational goals are at all associated with an efficient utilization of personnel, they will not be achieved by doing away with distribution requirements. Perhaps if some of the faculty become convinced of this, they will seek a solution in other directions. Incredible as it seems, someday I may get my other half loaf.

APPENDIX XXIII

THE DISTRIBUTION OF COURSES TAKEN BY 1963 GRADUATES

Prepared by

The Office of Institutional Research

October, 1963

The distribution of work taken by the Knox student has been a concern to those of us who give great weight to the values of a "liberal education". For a number of years the balance of faculty opinion leaned towards the suspicion that we were turning out a fair percentage of students who were not liberally educated no matter how one might choose to argue the definitions. The concern has been frequently expressed that we might become a preparatory school for universities which in fact place little value on a broad distribution of a student's work. It is probably true that many of us felt more suspicious in this regard when thinking about other majors than our own and that a lot of our opinions were supported only by impressions generalized from isolated cases. In any event in the spring of 1962 we formally reaffirmed our belief in liberal education by establishing minimum distribution requirements for all freshmen entering after that time.

This present study is an analysis of the distribution of work taken by our 1963 graduates, who were, of course, not subject to the new faculty regulations on distribution. There are a number of reasons for the inquiry. In the first place we ought to have data on subjects as meaningful as this; we ought to be able to get at the facts of the case rather than resting our judgements on general notions. Secondly, we need to know how the new requirements may shift the burden of education in particular areas. Are we going to expect enrollments to increase in specific areas? Which areas? Finally, at some time in the future we may well need historical information of what course distribution looked like back in the days before the 1962 regulations went into effect.

The data on course distribution for 1963 graduates are presented in the accompanying tables. A reference table was made for each department. Though the names of the individual students are withheld, the data in these tables are in fact presented in the alphabetical order of the students' names. These tables then tell the distribution of hours taken by each student in the various areas and the level at which the work was taken. Not all of the 120 hours taken by a graduate enter into these tables. Except for Modern Language majors, the work taken in Modern Languages is not shown in these tables. Except for Education majors, the work taken in Education is not shown. Courses taken in Physical Education have also been omitted.

The circled figures in the body of these reference tables show the number of courses an individual student would have been short in a given area according to our new regulations. These figures are intended to stand by themselves except as related to the area in which they are designated. They are not intended to indicate a shortage of courses at the 100, 200, or 300 level, but only a shortage of courses in a given area assuming current regulations as a standard. The tables do, of course, indicate an overwhelming concentration of 300 level work in the major field or in a field related to the major.

These data leave little doubt about the shortages most of these graduates had in some area of education. This much can be said without implying blame to any specific department chairman. It may be that a chairman was well aware of a student's shortcoming in a particular area and did his best to get the student to correct it. The data do point up

the general wisdom of the new regulations which require courses in every area and stipulate that some of these courses must be taken in the junior and senior years.

The reference tables show that the shortages of courses listed for students in a given major field tends to be concentrated in one area rather than be spread out over two areas. Thus social studies and humanities majors tended to be short in mathematics and sciences while science and mathematics majors tended to be short in social studies. The Chemistry, Physics and Music departments show minor exceptions to this rule. Only eleven students out of the 204 graduates showed a shortage in more than one area.

In addition to the reference tables, five summary tables were prepared as highlights or supplements to the general data. The data in these tables are largely self-explanatory, but a few points are perhaps in order.

1. From the data in Table 1 it is evident that the majority of our 1963 graduates (57.4%) were short at least one course in terms of current regulations. Perhaps more seriously slightly over twenty per cent of these students were short at least three courses. It will be remembered that these shortages tend to be concentrated in single areas.

Table 2 supplements this information by classifying these shortages by non-area majors. This allows us to answer this specific question: how would the existence of the current regulations have made a difference in the courses which students took in the three areas? Table 2 gives three answers:

a. 161 students not majoring in humanities would have been forced to take fourteen more courses in humanities. The 1963 graduates who did not major in humanities completed 98% of their humanities. Since the students who did major in humanities had no shortage in this area we may compute the percentage of humanities requirement completed by the 1963 class as a whole as approximately 99%. The shortage in humanities is localized in a few students and while the new regulations will eliminate these cases they will not mean that more students must now take more humanities courses than was the case in the past. Since humanities majors are considerably more than fourteen courses short in other areas and will probably reduce their amount of work in the humanities, on balance the total amount of work taken in that area will fall. The result of the new regulations will thus tend to be for more students to take humanities courses, but that fewer courses will be taken.

b. 139 students not majoring in social studies would have been forced to take forty more courses in social studies, having completed 90% of their requirement in this area. The 1963 class as a whole completed about 93.5% of its requirement. The effect of the new regulations at face value will be to eliminate the substantial shortage of work in this area characteristic of science majors, though for a whole class the percentage of work taken in social studies will probably be reduced. Such a statement, of course, assumes that the percentage of social studies majors does not change.

c. 132 non-science majors were short 175 courses in science and satisfied only 56% of their science requirement. The class as a whole completed

only 71.4% of the science requirement. The shortage in science far outweighs the shortages in humanities and social studies, and the new regulations will undoubtedly mean that more students will take more science courses.

2. Table 3 summarizes the data on concentration in major fields, and compares the 1963 class with that of 1961. Music and Modern Languages continue to lead in concentration though the latter had to gain to keep from being passed by Economics and Business Administration. Sociology and History show least concentration in majors with Psychology managing a substantial fall in concentration since 1961.

3. Table 4 shows the mean hours in the major field plus the number of hours in the related area for each department. Such a distribution is affected by the specific feelings about cognate courses which prevail in a department. Table 5 presents the courses taken in "related" fields for particular departments. Quite obviously a Physics major shows a high concentration in Mathematics and Science because a considerable knowledge of mathematics is considered requisite to his field. The Mathematics major, on the other hand, tends to take science courses not as cognates, but as general education courses. His concentration in the area of Mathematics and Science is thus much lower than that of the Physics major, and this will undoubtedly continue to be the case.

4. Table 4 also shows the average number of courses the majors in particular departments were short in other areas. In general, those departments which showed the highest concentration of courses taken in the major and

taken in related areas had the highest shortages in other areas. Music, Political Science, Modern Languages, Economics, and Speech may be taken as examples. At the other pole Psychology, Mathematics and Education show the closest approximations to fulfilling the current requirements.

George Melville

October, 1963

REFERENCE TABLES

DISTRIBUTION OF COURSES TAKEN IN THE MAJOR, IN RELATED AREAS, AND IN OTHER AREAS, CLASSIFIED BY DEPARTMENTS, 1963 GRADUATES

NOTE: Each horizontal line in the body of a table gives the hours of work taken in various areas by one student majoring in the given department.

The circled figures state the number of courses the particular student was short in the given area according to current definitions of distribution requirements.

TABLE 1

NUMBER AND PERCENTAGE OF 1963 GRADUATES SHORT ON CURRENT DISTRIBUTION REQUIREMENTS CLASSIFIED BY NUMBER OF COURSES SHORT

Number of Courses Short	Number of Students	Per Cent of Students
One or More	117	57.4
Two or More	67	32.8
Three or More	41	20.1
Four	4	2.0

Source: Office of the Registrar, October, 1963

TABLE 2

NUMBER OF STUDENTS NOT MAJORING IN SPECIFIED AREAS, COURSES SHORT IN THESE AREAS, AND PERCENTAGE OF CURRENT REQUIREMENTS COMPLETED IN THESE AREAS

	Non-Science Majors	Non-Social Studies Majors	Non-Humanities Majors
Number of Students	132	139	161
Number of Courses Short in Area	175	40	14
Percentage of Current Requirements Met	56%	90%	98%

Source: Office of the Registrar, October, 1963

TABLE 3

MOST AND LEAST HOURS TAKEN BY ONE STUDENT IN A MAJOR FIELD AND MEAN HOURS PER STUDENT IN A MAJOR FIELD, CLASSIFIED BY DEPARTMENTS

GRADUATING CLASSES, 1961, 1963

Department	Class of 1963				Class of 1961			
	Mean Hours Taken	Most Hours Taken	Least Hours Taken	Number of Students	Mean Hours Taken	Most Hours Taken	Least Hours Taken	Number of Students
Music	60.5	73	51	6	58.2	71	53	4
Modern Languages	49.2	70	32	8	48.0	67	24	6
Economics and Business Adm.	48.5	71	39	14	41.0	50	32	17
English	44.7	71	30	25	41.9	61	33	21
Art	43.8	60	33	5	28.5	30	27	2
Mathematics	43.8	63	31	29	38.6	52	28	15
Chemistry	43.5	54	29	16	42.1	54	28	12
Physics	43.5	67	31	12	43.0	51	36	8
Political Science	43.0	60	29	23	41.1	59	30	21
Biology	42.7	55	28	15	35.4	51	28	10
Speech	39.0	47	30	7	35.0	39	33	3
History	37.3	42	21	13	32.0	48	24	15
Education	35.6	40	28	16	33.2	36	31	6
Psychology	35.6	38	30	5	40.6	50	34	8
Sociology	26.2	33	18	10	28.0	30	24	3
Philosophy and Religion	--	--	--	--	33.2	39	24	5
All Departments	42.4			204	39.5			156

Source: Office of the Registrar, October, 1963

TABLE 4

MEAN HOURS IN RELATED AREAS AND MEAN COURSES SHORT*
IN OTHER AREAS CLASSIFIED BY AREAS AND DEPARTMENTS

Area and Department	Mean Hours in Area of Major	Mean Courses Short in Other Areas
Science		
Physics	81.2	1.42
Chemistry	80.6	.94
Biology	74.4	1.27
Mathematics	61.4	.28
Humanities		
Music	86.0	2.17
Speech	74.5	1.57
Art	67.8	1.00
English	64.1	1.40
Social Studies		
Political Science	75.0	1.83
Economics and Business Adm.	72.4	1.57
History	58.1	1.38
Sociology	57.8	.80
Psychology	56.6	.20
Others		
Modern Languages	--	1.62
Education	--	.38

Source: Office of the Registrar, October, 1963

*Course short in terms of current definitions of distribution requirements.

TABLE 5

ARRAYS OF NUMBER OF COURSES TAKEN BY STUDENTS IN SELECTED RELATED AREAS, CLASSIFIED BY SELECTED DEPARTMENTS, 1963 GRADUATES

Department	Related Area	
	History	Economics
Political Science	24 18 15 15 12 9 9 6 21 18 15 12 12 9 9 6 21 18 15 12 9 9 6 Mean - 13.0	21 16 12 11 8 8 8 8 20 15 12 11 8 8 8 4 19 14 11 8 8 8 8 Mean - 11.04
	Political Science	Economics
History	18 15 9 9 6 3 3 0 17 9 9 9 3 Mean - 8.5	26 8 4 4 3 3 0 0 8 8 4 4 3 Mean - 5.8
	Political Science	History
Economics	27 15 13 10 9 6 4 3 23 13 11 9 8 6 Mean - 11.2	12 10 9 6 6 3 0 0 12 9 6 6 3 0 Mean - 5.9

Department	Related Area		
	Mathematics	Chemistry	Biology
Physics	36 27 25 22 22 16 28 25 24 22 22 16 Mean - 23.8	14 11 10 8 8 7 11 11 10 8 8 5 Mean - 9.3	21 0 0 0 0 0 4 0 0 0 0 0 Mean - 2.1
	Biology	Mathematics	Physics
Chemistry	29 24 20 13 4 0 26 23 20 8 4 0 26 21 16 4 Mean - 14.9	27 16 16 10 6 3 19 16 13 10 3 3 16 16 13 10 Mean - 12.3	16 10 10 10 8 7 13 10 10 10 7 0 10 10 10 10 Mean - 9.4
	Chemistry	Mathematics	Physics
Biology	32 24 21 18 16 8 25 24 21 18 8 8 24 21 19 Mean - 19.1	17 10 10 6 0 0 10 10 6 6 0 0 10 10 6 Mean - 6.7	10 10 4 0 0 0 10 8 0 0 0 0 10 5 0 Mean - 3.8
	Physics	Chemistry	Biology
Mathematics	26 20 10 10 10 0 24 16 10 10 10 0 23 14 10 10 10 0 22 13 10 10 10 0 20 10 10 10 5 Mean - 11.5	32 10 5 0 0 0 24 8 0 0 0 0 18 8 0 0 0 0 10 8 0 0 0 0 10 8 0 0 0 Mean - 4.9	8 3 0 0 0 0 8 0 0 0 0 0 8 0 0 0 0 0 4 0 0 0 0 0 4 0 0 0 0 Mean - 1.3

Source: Office of the Registrar, October, 1963

App. XXIII

ART

Hours in Art				Hours in Other Humanities				Hours in Social Studies				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
3	19	18	40	6	12	3	21	10	6		16	11	10		21
3	3	43	49	15	12	6	33	6	9	4	19	6		-3	6
3	3	27	33	21	3	6	30	13	12	12	37	10		-1	10
3	3	31	37	18	6		24	13	9	3	25	13	5		18
3	6	51	60	9	3		12	3	3	-1	6	6	10	12	28
Totals and Averages															
15	34	170	219	69	36	15	120	45	39	19	103	46	25	12	83
3.0	6.8	34.0	43.8	13.8	7.2	3.0	24.0	9.0	7.8	3.8	20.6	9.2	5.0	2.4	16.6

App. XXIII

BIOLOGY

Hours in Biology				Hours in Other Sciences-Mathematics				Hours in Social Studies				Hours in Humanities			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
8	12	23	43	18	22		40	6	13	4	23	14			14
8	15	14	37	11	10		21	7	15		22	12	5		17
8	19	23	50	11	20		31	9		-1	9	14	3		17
4	15	12	31	17	10	7	34			-3	0	12	3		15
8	4	33	45	25	10		35	4	4	-1	8	6	12	7	25
8	11	18	37	19	20		39	4	6		10	12	6	9	27
8	16	20	44	8		4	12	23	7		30	14	14		28
	11	17	28	19	20	5	44	4	10		14	16		7	23
4	12	24	40	19	10	4	33	9	6		15	14	9		23
8	19	26	53	18	20		38	3		-2	3	15		3	18
4	15	21	40	21	24	14	59			-3	0	15			15
4	15	19	38	8			8	7	15	5	27	12	8	3	23
8	15	26	49	11	15		26	7	10	3	20	15	3		18
8	16	31	55	14			14	16	3		19	12	9		21
4	8	39	51	21	20		41	7		-1	7	6	6		12
Totals and Averages															
92	203	346	641	240	201	34	475	106	89	12	207	189	78	29	296
6.1	13.5	23.1	42.7	16.0	13.4	2.3	31.7	7.1	5.9	.8	13.8	12.6	5.2	1.9	19.7

App. XXIII

CHEMISTRY

Hours in Chemistry				Hours in Other Sciences-Mathematics				Hours in Social Studies				Hours in Humanities			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
11	10	20	41	18	14	8	40	6	3	-1	9	14	3		17
8	10	16	34	16	18	16	50	4	6		10	13	6		19
11	10	21	42	18	10		28		14		14	15	5	3	23
11	10	8	29	18	8	7	33	13	17	10	40	7	3		10
11	14	15	40	18	10	18	46		9	9	18	9		6	15
11	10	17	38	24	4	8	36	4	13		17	9		-2	9
11	10	31	52	16	10		26	7	6	3	16	3	3	-3	6
11	10	14	35	21		18	39	10	10		20	9		-1	9
11	10	32	53	14	10	3	27	10	12	6	28	9			9
11	10	33	54	18	24	19	61	-1	3	3	6	12		-1	12
11	10	33	54	10	10	6	26	3		-2	3	9	6		15
11	10	18	39	17	10		27	3	12	3	18	14	6		20
11	10	32	53	4	9	37	50	4	11		15	6	3	9	18
11	10	22	43	11	16		27		6	-1	6	20	3		23
11	10	18	39	32	10	8	50	6	3	-1	9	14	3		17
11	10	29	50	4	10	17	31	4		-2	4	17	12	3	32
Totals and Averages															
173	164	359	696	259	173	165	597	74	125	34	233	180	53	21	254
10.8	10.3	22.4	43.5	16.2	10.8	10.3	37.3	4.6	7.8	2.1	14.5	11.3	3.3	1.3	15.9

ECONOMICS AND BUSINESS ADMINISTRATION

Hours in Economics				Hours in Other Social Studies				Hours in Humanities				Hours in Sciences-Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
	16	55	71	3	3	10	16	9	6		15	3		-3	3
	16	33	49	13	9	3	25	18	8		26	6		-3	6
	19	33	52		15	3	18	15	9		24	16		-1	16
	19	25	44	10	16		26	20	12		32			-3	0
	16	33	49	13	15	4	32	20	8	3	31			-3	0
	16	36	52	9	15	3	27	14	8		22	8		-1	8
	16	29	45		18	15	33	12	3	3	18			-3	0
	16	24	40	9	9		18	9	5		14	10	10		20
	18	39	57	6	16		22	12	8		20	20	4		24
	16	28	44		18	11	29	19	6		25	11		-2	11
	19	30	49	9	9	2	20	16	23	2	41	3	5	-2	8
	16	29	45	10	12	3	25	12	3		15	14		-1	14
	16	27	43	14	14		28	11			11	18	10		28
	16	23	39	6	7	3	16	17	3		20	25			25
Totals and Averages															
	235	444	679	102	176	57	335	204	102	8	314	134	29		163
	16.8	31.7	48.5	7.3	12.5	4.1	23.9	14.5	7.3	.6	22.4	9.5	2.1		11.6

App. XXIII

EDUCATION

Hours in Education				Hours in Other Social Studies				Hours in Humanities				Hours in Sciences-Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
	4	31	35	13	9		22	20	15	3	38	17		4	21
	4	31	35	13	31		44	12	9	6	27	12		4	16
	4	31	35	13	12		25	20	9	3	32	21			21
	3	25	28	16	9		25	15	18	3	36	24			24
	4	31	35	22	9		31	17	18	6	41	4		-2	4
	4	31	35	8	20		28	21	9	3	33	10	8		18
	7	33	40	16	15		31	17	6	3	26	11		4	15
	4	34	38	13	12	3	28	21	12	3	36	15			15
	10	27	37	16	12		28	20	9	8	37	8	-1	4	12
	4	31	35	16	9		25	18	12	3	33	20			20
	7	31	38	13	12	3	28	14	15	6	35	14		-1	14
	7	30	37	13	18	4	35	18	9	6	33	10	-1	4	14
	7	32	39	14	11		25	15	6	3	24	10	2	-1	12
	4	31	35	10	9		19	17	12	3	32	17		2	19
	4	32	36	17	9		26	19	12	3	34	21			21
	4	27	31	13	9		22	19	14	8	41	17		4	21
Totals and Averages															
81	488	569		226	206	10	442	283	185	70	538	231	10	26	267
5.1	30.5	35.6		14.1	12.9	.6	27.6	17.7	11.5	4.4	33.6	14.5	.6	1.6	16.7

App. XXIII

ENGLISH

Hours in English				Hours in Other Humanities				Hours in Social Studies				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
6	12	23	41	18			18	9	6		15	3		-3	3
6	6	24	36	15		3	18	16	19		35	6		-3	6
1	15	27	43	14		3	17	10	33		43	8		-1	8
3	15	44	62	11	6	18	35	4	3	-1	7	8		-1	8
3	15	30	48	12			12	10	3		13	4		-2	4
	12	18	30	6	6	15	27	4	9	6	19	11	14	12	37
6	9	27	42	10	6	14	30	13	7		20	20			20
3	15	24	42	14			14	7	23	3	33	6		-3	6
	16	55	71	12	24	7	43		25	10	35		4	-2	4
3	14	24	41	14	6	11	31	9	6	7	22	8		-1	8
8	9	24	41	3	2		5	28	12	2	42	10		-3	10
3	12	24	39	12	3	17	32	6	12		18		10	6	16
1	15	42	58	15	9	12	36	13	6	3	22			-3	0
3	12	24	39	8	2		10	6	3	-1	9	11	20		31
1	12	30	43	7	3		10	13	12	9	34	8		-3	8
6	15	28	49	11		8	19	4	6	6	16	3	-2	3	6
1	12	21	34	6	2		8	10	29	3	42	14	-3		14
3	11	32	46	11	3		14	8	2		10	15	24		39
3	9	33	45	9	3		12	9	9		18	14	10		24
3	9	24	36	15			15	13	19	3	35	8		-1	8
6	15	30	51	9	6	4	19	16	12		28	14			14
6	18	33	57	12			12	10	16	10	36	5		-2	5

ENGLISH
(Continued)

Hours in English				Hours in Other Humanities				Hours in Social Studies				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
3	9	27	39	11		6	17	10	9	-1	19	6	10		16
3	9	24	36	12	2		14	3	3		6	22	10	6	38
3	12	33	48	6	3	9	18	6	18	6	30	6		-3	6
Totals and Averages															
84	308	725	1117	273	86	127	486	237	302	68	607	210	102	27	339
3.4	12.3	29.0	44.7	10.9	3.4	5.1	19.4	9.5	12.1	2.7	24.3	8.4	4.1	1.1	13.6

App. XXIII

HISTORY

Hours in History				Hours in Other Social Studies				Hours in Humanities				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
	12	9	21	15	14	9	38	15	8		23	10		-2	10
	12	15	27	16	28	17	61	17	3		20	3		-3	3
	12	18	30	13	9	3	25	14	18	9	41	8		3	11
	12	15	27	10	10	3	23	18	9		27	13	5		18
	12	12	*24	9	11		20	14	3	9	26	11		-1	11
	12	30	42	9	6	12	27	21	4	5	30	14		-1	14
	12	15	27	9	16		25	17	15	3	35	8		-1	8
	6	34	40	6	10	11	27	19	9	3	31	3		-3	3
3	12	12	27	13	6	11	30	18	9		27	14		-1	14
	12	22	34	13	20	3	36	18	9	9	36	7	-1	3	10
	12	18	30	17	13		30	10	9	18	37	7		3	10
	9	20	29	13	6	3	22	9	12	18	39	7		-2	7
	12	12	24	11			11	29	17	9	55	6		-3	6
Totals and Averages															
3	147	232	382	154	149	72	375	219	125	83	427	111	5	9	125
.2	11.3	17.8	29.3	11.8	11.5	5.5	28.8	16.8	9.6	6.4	32.8	8.5	.4	.7	9.6

*30 Hours Combined Transfer Credit.

MATHEMATICS

Hours in Mathematics				Hours in Sciences				Hours in Social Studies				Hours in Humanities			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
6	10	31	47	10			10	6	6		12	11	9	10	30
8		48	56	18	6		24	4	4	-1	8	6	9		15
	10	27	37	10		4	14	4	18		22	6	8	6	20
	10	25	35	20	18	4	42	3	9		12	18	3		21
	10	21	31	10			10	6	20	7	33	16	8	5	29
	10	26	36				0	13	20	10	43	17	6		23
6	10	36	52	10	6	8	24	12	3		15	3	6		9
6	10	27	43	10			10	4	13		17	14	3		17
6	10	25	41	24			24	6	3		9	14	2	5	21
3	10	50	63	10			10	8	-1	3	11	7	9	12	28
	6	46	52	15			15		7	-1	7	9	9	9	27
	10	24	34	5			5	7	15		22	15	8		23
	10	22	32	10			10	10	7		17	15	15	12	42
	10	30	40	21	10	3	34		20	3	23	12		6	18
6	9	28	43	12	6	8	26	8	6		14	20	5	2	27
	10	36	46	25	6	7	38	6	8		14	6	6		12
	13	27	40	26			26		3	-2	3	17	6	3	26
	10	27	37				0	7	9	17	33	15	15		30
	10	24	34	10			10	9	3		12	14	8	3	25
	10	45	55	10	8	8	26	6		-2	6	12		3	15
	10	45	55	10			10	4	11	3	18	4	3	6	13
	13	24	37	8			8	10	18	10	38	17			17
	10	12	*22	18	10	3	31	6	8		14	12			12

MATHEMATICS
(Continued)

Hours in Mathematics				Hours in Sciences				Hours in Social Studies				Hours in Humanities			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
	6	53	59	10	10		20	6	7		13	9		3	12
6	10	27	43	14			14	14	14	3	31	12	6	3	21
	10	31	41	18			18		14	7	21	14	3	3	20
10	13	34	57	21			21	6	2	(*)	8	22	12	6	40
	13	40	53	10			10		12		12	17	9		26
3	10	37	50	20	3	4	27	13	3		16	12	3		15
Totals and Averages															
60	283	928	1271	377	83	49	509	178	263	63	504	370	171	97	638
2.1	9.7	32.0	43.8	13.0	2.9	1.7	17.6	6.1	9.1	2.2	17.4	12.8	5.9	3.3	22.0

* 30 Hours Combined Transfer Credit.

App. XXIII

MODERN LANGUAGES

Hours in Modern Languages				Hours in Humanities				Hours in Social Studies				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
12	15	21	48	12	9	35	56	6	9		15	8		[illegible]	8
8	12	50	70	14		3	17	6	17	9	32			[illegible]	0
16	15	21	52	17	6	10	33	4	6		10	4		[illegible]	4
24	15	21	60	13	12	6	31	4	6	3	13	3		[illegible]	3
16	15	27	58	21	3	3	27	10	3		13		[illegible]	4	4
8	9	15	32	11	18	9	38	4	6		10	14	10		24
10	12	18	40	21	15	9	45	14	12		26	6	[illegible]	3	9
16	6	12	*34	9	6	9	24	6	6		12	11	10		21
Totals and Averages															
110	99	185	394	118	69	84	271	54	65	12	131	46	20	7	73
13.7	12.4	23.1	49.2	14.8	8.6	10.5	33.9	6.8	8.1	1.5	16.4	5.7	2.5	.9	9.1

* 30 Hours Graduated Transfer Credit.

App. XXIII

MUSIC

Hours in Music				Hours in Other Humanities				Hours in Social Studies				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
12	21	20	53	14			14	8	3	-1	11	14		-1	14
20	20	11	51	29	16	6	51	17	6		23	19			19
12	18	26	56	12	5	6	23	6	3	-1	9	6		-3	6
12	20	41	73	15			15	6	3	-1	9			-3	0
13	22	30	65	12	6	12	30		6	-1	6	8		-1	8
12	18	35	65	20			20	4	6		10	14		-1	14
Totals and Averages															
81	119	163	363	102	27	24	153	41	27		68	61			61
13.5	19.8	27.2	60.5	17.0	4.5	4.0	25.5	6.8	4.5		11.3	10.2			10.2

App. XXIII

PSYCHOLOGY

Hours in Psychology				Hours in Other Social Studies				Hours in Humanities				Hours in Sciences-Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
4	12	22	38	3	25	5	33	7	3	12	22	8		3	11
4	9	17	30	3	15	19	37	15	6	9	30	15	4		19
4	9	24	37		6	4	10	9	12		21	15	7	7	29
4	9	23	36	10		4	14	15	15	3	33	11		14	25
4	6	27	37	3	4	4	11	11	3	-1	14	27		12	39
Totals and Averages															
20	45	113	178	19	50	36	105	57	39	24	120	76	11	36	123
4.0	9.0	22.6	35.6	3.8	10.0	7.2	21.0	11.4	7.8	4.8	24.0	15.2	2.2	7.2	24.6

App. XXIII

PHYSICS

Hours in Physics				Hours in Other Sciences-Mathematics				Hours in Social Studies				Hours in Humanities			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
10	10	21	41	16	14	21	51	3	3	-1	6	7	6	3	16
10	13	14	37	5	10	29	44		3	-2	3	14	6	5	25
10	13	41	64	8	10	15	33			-3	0	9	3		12
10	6	7	*23	15	5	6	26	6	13		19	14	3		17
10	10	10	*30	14	10	17	41		4	-2	4	17	3		20
10	13	18	41	8	10	9	27	4	14	11	29	9	3	3	15
10	6	15	31	12	10	9	31	6	4	-1	10	19	9	6	34
10	13	29	52	8	10	15	33	8	6	3	17	12			12
10	10	47	67	11	13	26	50	4		-2	4	3	3	-2	6
10	13	21	44	16	13	21	50		12		12	4	6	3	13
10	13	26	49	11	10	15	36	8		-2	8	9		-1	9
10	9	24	43	14	10	6	30	6	16	10	32	3	6	-1	9
Totals and Averages															
120	129	273	522	138	125	189	452	45	75	24	144	120	48	20	188
10.0	10.7	22.8	43.5	11.5	10.4	15.8	37.7	3.8	6.2	2.0	12.0	10.0	4.0	1.7	15.7

* 30 Hours Combined Transfer Credit

App. XXIII

POLITICAL SCIENCE

Hours in Political Science				Hours in Other Social Studies				Hours in Humanities				Hours in Sciences-Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
	12	29	41	7	16	3	26	24	6	6	36	8		-1	8
	15	37	52	6	8	9	23	4	6		10	7	10	3	20
	15	20	35	13	14	12	39	15	3		18			-3	0
	18	32	50	10	20	4	34	14	6		20	8		3	11
	15	29	44	7	30	9	46	6	6	-1	12	7		-2	7
	12	17	29	13	26	6	45	11	12	15	38			-3	0
	12	19	31	4	20	9	33	13	3	6	22	8		-1	8
	14	26	40	9	12	10	31	17	3		20	8		-1	8
	15	22	37		23	9	32	11	6	23	40	-2		3	3
	19	20	39	6	20		26	9	12	22	43			-3	0
3	21	36	60	10	14	6	30	15	6	3	24	8		-1	8
	18	23	41	3	17	6	26	6	12	9	27			-3	0
	15	40	55		14	6	20	17	8		25	8		-1	8
	21	37	58	3	20	3	26	10	3	3	16			-3	0
3	15	30	48	10	11		21	16	24	3	43			-3	0
	12	17	29	6	17	3	26	16	3		19	11		3	14
	15	30	45	10	20	3	33	20	6	9	35			-3	0
	18	28	46	6	31	10	47	6	8	3	17			-3	0
3	15	17	35	15	17	4	36	11	6	6	23	11		-1	11
	15	28	43	10	29	10	49	14	3	6	23	8		-1	8
	12	33	45		20	12	32	12		3	15			-3	0
	18	32	50	10	21	4	35	14	6		20			-3	0
	15	20	35	17		3	20	16	13	2	31	8		-1	8
Totals and Averages															
9	357	622	988	175	420	141	736	297	161	119	577	100	10	12	122
.4	15.5	27.1	43.0	7.6	18.3	6.1	32.0	12.9	7.0	5.2	25.1	4.3	.4	.5	5.2

App. XXIII

SOCIOLOGY

Hours in Sociology				Hours in Other Social Studies				Hours in Humanities				Hours in Sciences-Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
	6	18	24	10	6		16	3	5	-1	8	29	15		44
	6	12	18	16	15		31	18	9	4	31	3		-3	3
	9	18	27	10	6	6	22	12	9	3	24	4	4	-1	8
	9	21	30	10	14	4	28	7	6		13	10	12	3	25
	11	15	26	14	9		23	16	12	6	34	14		-1	14
2	9	18	29	5	9	3	17	21	8	3	32	12	8	6	26
	9	24	33	7	22	4	33	7	12	3	22	16			16
	15	12	27	13	18	8	39	14	12	6	32	14		-1	14
	6	15	21	19	20	11	50	11	9		20	11		-1	11
3	12	12	27	14	28	15	57	25	18	7	50	8	3	3	14
Totals and Averages															
5	92	165	262	118	147	51	316	134	100	32	266	121	42	12	175
.5	9.2	16.5	26.2	11.8	14.7	5.1	31.6	13.4	10.0	3.2	26.6	12.1	4.2	1.2	17.5

App. XXIII

SPEECH

Hours in Speech				Hours in Other Humanities				Hours in Social Studies				Hours in Sciences and Mathematics			
100	200	300	Total	100	200	300	Total	100	200	300	Total	100	200	300	Total
3	13	31	47	14	12	18	44	6	6		12	11	10		21
6	12	25	43	15	22	11	48	6	3	-1	9			-3	0
3	9	18	30	11	11	3	25	10	20	19	49	8		-1	8
	12	32	44	17	3	15	35	10		3	13	6		-3	6
3	9	21	33	20	9	3	32	7	9	10	26	10	5	4	19
3	12	19	34	8	3	3	14	7	12	25	44	16	5		21
	10	32	42	18	15	18	51	6		-1	6	14		-1	14
Totals and Averages															
18	77	178	273	103	75	71	249	52	50	57	159	65	20	4	89
2.6	11.0	25.4	39.0	14.7	10.7	10.1	35.5	7.4	7.1	8.2	22.7	9.3	2.9	.5	12.7

APPENDIX XXIV

To: Sharvy Umbeck

December 8, 1969

From: George Melville

Re: Performance of Black Students

Attached are two sets of reference materials on Black students: (1) the Permanent Records of Blacks who attended Knox last year, several of whom graduated, and (2) the Educational Development Records of Black students admitted this year. A few minutes study of these materials will probably be as rewarding to you as my own opinions on the subject.

Last Year's Blacks

1) With one or two exceptions these students were in the upper ten per cent of their high school class and had relatively low board scores. Many of them were in the upper one to five per cent of their class. Most of the high schools from which these students came have high handicaps in our high school weighting system. The numerator of their class rank is multiplied by a figure greater than one and divided by the denominator to provide a weighted class rank for AWR identification. This means that we treat most of them as having lower class ranks than they actually have for purposes of freshman counseling.

2) Most Blacks had trouble in their freshman year but came along well as they gained academic experience. Some have finished very strong (Velma Powell, La Brenda White).

3) In three specific cases involving new teaching situations teachers have tended toward letting students evaluate themselves. Two of these cases particularly involved Black students. One of these was a course in American Negro History and the other was a course in Social Philosophy. On one group of student records I have circled grades in red ink to indicate that I feel the grade is inconsistent with the rest of the student's record.

Last year we devised a system of comparing the index of grades given by a teacher in a given year with an index of grades given his students by all other teachers that year. The three people allowing studentopinion to influence the grade showed up as follows:

Instructors Average Grade	Average of Other Grades
3.28	2.62
3.35	2.87
2.95	2.54

It has been the practice in the past to give faculty such iformation by identifying the instructor's own grade index to him in an array of anonymous faculty grade indexes. This is done by the Office of the Dean of the College

and has not been done this year. I think it should be done.

You might recall that last year we amended a regulation to change pass-fail to satisfactory-unsatisfactory and to allow a teacher in special situations to teach his entire class on a satisfactory-unsatisfactory basis. This is working toward reducing some of our recent distrotions in grading.

Summary: In the immediate past we have been selective in our admissions policy vis a vis Black students while consciously trying to increase their numbers at Knox. The development of these students has been, with a very few exceptions, very gratifying. Some fear has been expressed that Black militancy may take up considerable time for these students, leading them to select courses which they can pass with a minimum of effort. While abnormally high grades for some Black students have been turned in by a few instructors, there is no evidence that these grades were needed to offset poor performances in other classes. This potential problem has been largely eliminated by the instructors' election to place the courses on a satisfactory-unsatisfactory basis.

App. XXIV

KNOX COLLEGE

GALESBURG, ILLINOIS

IDENT'S SURNAME	FIRST	MIDDLE	DATE OF ENTRY
	5		9/68

E AND PLACE OF BIRTH

GUST 31, 1951 9/68

ICAGO ILLINOIS

E AND ADDRESS OF HIGH SCHOOL

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

MFION COLLEGE

NCSTON JAMAICA

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	RANK	1/10	1/4	CEEB VERBAL	MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL. GM.	TRIG. SO. GM.	CIVICS SOC. ST.	ECON.	POL. SCI.	BIO.	CHEM.	PHY
8	120	1	1			4					4		3	3	1	1			2	1	1

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1968-69				
ENG	101	FRESHMAN ENG	1.0	D+
PSY	111	INTRO PSYCH	(1.0)	F
SOC	201	INTRO TO SOC	1.0	D
PEM		CHOICE ACTIVITY		F
			~~3.0~~ 2.0	
2ND TERM 1968-69				
IST	105	WEST CIV	(1.0)	F
HIL	331	SOCIAL PHIL	1.0	A
OC	202	SOC INST	(1.0)	WX
EM		RIFLE MARKS		U
			3.0	
3RD TERM 1968-69				
NG	221	INTRO TO POETRY	(1.0)	WX
NG	223	INTRO TO DRAMA	(1.0)	WX
EM		RIFLE MARKS		U
HIL	212	PHIL&PSYCH EXP PERS VAL	1.0	P
			~~2.0~~ 1.0	

COURSE DESCRIPTION

CREDIT GRADE

11

Dropped by the College

THIS STUDENT IS IN GOOD STANDING UNLESS OTHERWISE INDICATED

ISSUED TO

ENT'S SURNAME FIRST MIDDLE

DATE OF ENTRY 9/68

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNO
COLLE
GALESBU
ILLINO

AND PLACE OF BIRTH
CH 21 1950
CAGO ILL

E AND ADDRESS OF HIGH SCHOOL
GHT D EISENHOWER H S
E ISLAND ILL

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL. GM	TRIG SO. GM	CIVICS SOC. ST.	ECON.	POL. SCI	BIO.	CHEM.	P
79	569	2	1	466	492	3					4			3	1		5	6	1	1	1

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1968-69				
IOL	121	CELL BIOLOGY	1.0	D
NG	101	FRESHMAN ENG	1.0	C
US	106	INT TO MUS	1.0	D
EM		INTERCOLL ATHLE		A
			3.0	
2ND TERM 1968-69				
IOL	122	BIO DIVERSITY	1.0	C
IST	201	AMER HIST	1.0	B-
PAN	102	ELEM S-AN	1.0	B-
EM		INTERCOLL ATHLE		S
			3.0	
3RD TERM 1968-69				
IOL	212	MICROBIOLOGY	1.0	D-
NG	324	STUD IN AM LIT	1.0	C+
RP	122	NON-VIOL DIR	(.5)	WX
IST	333	20TH CENT NEGRO	1.0	A-
EM		CHOICE ACTIVITY		S
			3.0	

UDENT'S SURNAME FIRST MIDDLE

DATE OF ENTRY 9/68

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

TE AND PLACE OF BIRTH
EBRUARY 7 1952
CUSTON TEX

ME AND ADDRESS OF HIGH SCHOOL
HILLIS WHEATLEY H S
CUSTON TEXAS

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	RANK	1/10	1/4	CEEB VERBAL	MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG-PL. GM	TRIG-SD. GM	CIVICS SOC. ST.	ECON.	POL. SCI.	BIO.	CHEM.	PHY
3	477	1	1	544	590	4					2	1	1	25	1	5	5		1		1

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1968-69				
CHEM	101	GEN CHEM	1.0	C
ENG	101	FRESHMAN ENG	1.0	C
MATH	151	CALCULUS I	1.0	C
PEW		TENNIS		C
			3.0	
2ND TERM 1968-69				
CHEM	102	GEN CHEM	1.0	C
ENG	222	INTRO TO FICT	1.0	C-
MATH	152	CALCULUS II	1.0	C
PEW		BADMINTON		S
			3.0	
3RD TERM 1968-69				
CHEM	103	GEN CHEM	1.0	C-
HIST	333	20TH CENT NEGRO	1.0	B+
MATH	301	LINEAR ALG	1.0	C-
PEW		TENNIS		S
			3.0	

COURSE DESCRIPTION	CREDIT	GRA

THIS STUDENT IS IN GOOD STANDI
UNLESS OTHERWISE INDICATED

DENT'S SURNAME FIRST MIDDLE

DATE OF ENTRY 9/68

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

E AND PLACE OF BIRTH
RCH 3 1950
CHIGAN CITY IND

ME AND ADDRESS OF HIGH SCHOOL
STCN SR HIGH SCHOOL
CHIGAN CITY, IND

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL. GM	TRIG. SO. GM	CIVICS SOC. ST.	ECON.	POL. SCI.	BIO.	CHEM.	PHY
69	736	3	2			4						1	1	2		1		1	1		1

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1968-69				
ENG	101	FRESHMAN ENG	1.0	C+
HIST	104	WEST CIV	1.0	C
PSY	111	INTRO PSYCH	1.0	D
PEM		INTERCOLL ATHLE		A
			3.0	
2ND TERM 1968-69				
HIST	105	WEST CIV	1.0	C
MATH	101	BASIC MATH	1.0	C-
PS	201	AM NATL GOVN	1.0	C-
PEM		INTERCOLL ATHLE		S
			3.0	
3RD TERM 1968-69				
HIST	106	WEST CIV	1.0	tC
HIST	333	20TH CENT NEGRO	1.0	A-
MATH	102	BASIC MATH II	1.0	C
PEM		CHOICE ACTIVITY		S
			3.0	

COURSE DESCRIPTION	CREDIT	GRADE

THIS STUDENT IS IN GOOD STANDING UNLESS OTHERWISE INDICATED

UDENT'S SURNAME FIRST MIDDLE

DATE OF ENTRY 9/67

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

ATE AND PLACE OF BIRTH
OVEMBER 26 1949
LTREIMER ARK

AME AND ADDRESS OF HIGH SCHOOL
RANE HIGH SCHOOL
HICAGO ILL

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	HIGH SCHOOL RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL. GM.	TRIG. SO. GM.	CIVICS SOC. ST.	ECON.	POL. SCI.	BIO.	CHEM.	PHY
7	478	1	1	505	450	4					3	1	2	3	1				2	1	1

COURSE DESCRIPTION			CREDIT		GRADE
1ST TERM 1967-68					
BIOL	121	CELL BIOLOGY	1	0	D
ENG	101	FRESHMAN ENG	1	0	B+
MATH	151	CALCULUS I	1	0	D
PEM		INTERCOLL ATHLE			A
			3	0	
2ND TERM 1967-68					
BIOL	122	BIO DIVERSITY	1	0	D
MATH	152	CALCULUS II	1	0	D
MUS	106	INT TO MUS	1	0	C-
PEM		WEIGHT TRAIN			A
			3	0	
3RD TERM 1967 68					
HIST	106	WEST CIV	1	0	C+
PS	201	AM NATL GOVN	1	0	B-
SOC	201	INTRO TO SOC	1	0	C
PEM		INTERCOLL ATHLE			A
			3	0	
1ST TERM 1968-69					
ECON	201	PRINCIPLES I	1	0	D
GERM	101	ELEM GERMAN	1	0	C
PS	215	CON AM FO POL	1	0	C
PEM		INTERCOLL ATHLE			A
			3	0	
2ND TERM 1968-69					
AS	201	CHG ENV AM CULT	1	0	A-
GERM	102	ELEM GERMAN	1	0	C
PS	317	COMP GOVTS ASIA	1	0	B
			3	0	
3RD TERM 1968-69					
AS	202	CHG ENV AM CULT	1	0	B
ENG	324	STUD IN AM LIT	1	0	B-
PS	202	ST REG LOCAL	1	0	C+
			3	0	

(probably not out of limits)

THIS STUDENT IS IN GOOD STAND UNLESS OTHERWISE INDICATED.

UDENT'S SURNAME FIRST MIDDLE

DATE OF ENTRY 9/67

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

ATE AND PLACE OF BIRTH
EPTEMBER 15 1948
OUSTON TEX

AME AND ADDRESS OF HIGH SCHOOL
HILLIS WHEATLEY H S
OUSTON TEX

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	HIGH SCHOOL RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL. GM	TRIG. SO. GM	CIVICS SOC. ST.	ECON.	POL. SCI.	BIO.	CHEM.	PHY
9	465	1	1	356	408	4 5	2	2				1	1	3	5	5	5		1 5	1	

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1967-68				
BIOL	121	CELL BIOLOGY	1 0	C
ENG	101	FRESHMAN ENG	1 0	B-
PHIL	115	INT TO PHIL	1 0	C+
PEW		BOWLING		C
			3 0	
2ND TERM 1967-68				
BIOL	122	BIO DIVERSITY	1 0	C-
ENG	223	INTRO TO DRAMA	1 0	C
FR	102	ELEM FRENCH	1 0	B
PEW		BADMINTON		C
			3 0	
3RD TERM 1967 68				
BIOL	212	MICROBIOLOGY	1 0	C-
FR	103	ELEM FRENCH	1 0	B+
SOC	201	INTRO TO SOC	1 0	C
PEW		TENNIS		C
			3 0	
1ST TERM 1968-69				
CHEM	101	GEN CHEM	1 0	D-
FR	201	INTER FRENCH	1 0	C
MUS	106	INT TO MUS	1 0	C
			3 0	
2ND TERM 1968-69				
ENG	222	INTRO TO FICT	1 0	IC
HIST	201	AMER HIST	1 0	IC+
PS	201	AM NATL GOVN	1 0	ID
			3 0	
3RD TERM 1968-69				
ENG	241	MAST LIT I	1 0	C-
ENG	324	STUD IN AM LIT	1 0	B
HIST	333	20TH CENT NEGRO	1 0	A-
			3 0	

COURSE DESCRIPTION CREDIT GR

THIS STUDENT IS IN GOOD STANDI
UNLESS OTHERWISE INDICATED.

UDENT'S SURNAME FIRST MIDDLE

DATE OF ENTRY 9/67

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

ATE AND PLACE OF BIRTH
GUST 20 1949
ICAGO ILL.
AME AND ADDRESS OF HIGH SCHOOL
HORNTON TWP H S
ARVEY ILL

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	HIGH SCHOOL RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL. GM	TRIG. SO. GM	CIVICS SOC. ST.	ECON	POL. SCI.	BIO.	CHEM.	PHY
72	790	1	1	532	478	4					3	1	1	3		1			1	1	

COURSE DESCRIPTION		CREDIT	GRADE
ADV FROM THORNTON TWP JUNIOR COLLEGE, HARVEY, ILLINOIS, SUMMER 1967:			
M ATH	COLLEGE ALGEBRA	.9	
1ST TERM 1967-68			
ENG 101	FRESHMAN ENG	1.0	C
HIST 104	WEST CIV	1.0	C+
MUS	ORGAN	(.5)	WX
SPAN 201	INTER SPAN	1.0	B
PEW	BOWLING		B
		3.5	
2ND TERM 1967-68			
ENG 221	INTRO TO POETRY	1.0	C+
HIST 105	WEST CIV	1.0	D-
SPAN 202	READ SPAN LIT	1.0	B-
PEW	MODERN DANCE		D
		3.0	
3RD TERM 1967 68			
PSY 111	INTRO PSYCH	1.0	C
SOC 201	INTRO TO SOC	1.0	C
SPAN 302	MOD FICT POET	1.0	B-
PEW	TENNIS		C
		3.0	
1ST TERM 1968-69			
PS 201	AM NATL GOVN	1.0	C
SOC 203	RACE-ETH RELAT	1.0	B
SPAN 301	MOD DRAMA	1.0	B-
		3.0	
2ND TERM 1968-69			
PHYS 251	THE UNIVERSE	1.0	D-
PS 241	POL PAR PR GR	1.0	D
SPAN 210	CONV & COMP	1.0	C+
		3.0	
3RD TERM 1968-69			
HIST 333	20TH CENT NEGRO	1.0	A-
PS 202	ST REG LOCAL	1.0	D
SPAN 320	WRITT AND ORAL	1.0	C
		3.0	

COURSE DESCRIPTION CREDIT GR

THIS STUDENT IS IN GOOD STANDI
UNLESS OTHERWISE INDICATED.

9 65

June 14, 1969

DEGREE
Bachelor of Arts, rite

MAJOR FIELD
Sociology

HONORS IN

CLASS RANK
244/259

KNOX COLLEGE

GALESBURG ILLINOIS

AND PLACE OF BIRTH
TOBER 17 1947
BILE ALABAMA

AND ADDRESS OF HIGH SCHOOL
ANE HIGH
ICAGO ILLINOIS

HIGH SCHOOL UNITS

HIGH SCHOOL S	RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG. PL	ALG. GM	TRIG. SO	TRIG. GM	CIVICS SOC. ST.	ECON	POL. SCI.	BIO.	CHEM	PHY
5	274	1	1	535	403	4					3	1	2	3		5					1	1	1

COURSE DESCRIPTION	CREDIT	GRADE
1ST SEM 1965 66		
H 121 PRIN OF MATH	3	C-D
T 105 WEST CIV	4	D-
102 FRESHMAN ENG	4	D
101 REQ PHYS ED		C
101 ELEM FRENCH	4	C-
	15	
ND SEMESTER 1965 66		
102 ELEM FRENCH	4	C
T 106 WEST CIV	4	C-
202 SOC OF COMM	3	D+
H 262 ARGUMENTATION	3	C
102 REQ PHYS ED		C
	14	
URSE CREDITS TO DATE 9		
1ST TERM 1966 67		
201 INTER FRENCH	1	C-
S 106 INT TO MUS	1	C-
CH 231 ACTING	1	C
W 201 REQ PHYS ED		C-
	3	
2ND TERM 1966 67		
R 202 READ FR LIT	1	C
IST 201 AMER HIST	1	C
EL 203 BIBLE TODAY	1	C
W 202 REQ PHYS ED		B-
	3	
3RD TERM 1966 67		
NTH 112 INTRO ANTH	1	C-
HIL 115 INT TO PHIL	1	D
OC 201 PRIN OF SOC	1	C
	3	
1ST TERM 1967 68		
PSY 310 INTERPERS RELA	1.0	B
SOC 202 SOC INST	1.0	D
SOC 302 CONT SOC THEO	1.0	C+
	3.0	
2ND TERM 1967 68		
ENG 223 INTRO TO DRAMA	1.0	B
SOC 203 RACE-ETH RELAT	1.0	C
SOC 301 SOC RES METH	1.0	C
	3.0	

COURSE DESCRIPTION	CREDIT	GRADE
3RD TERM 1967 68		
PHYS 253 SCI AND SOC	1.0	B
SOC 307 SCC PRB FLD CRS	1.0	B
SOC 310 SMALL GROUPS	1.0	C
	3.0	
1ST TERM 1968-69		
BIOL 320 HUM ECOLOGY	1.0	C
CHEM 300 CHEMISTRY	1.0	D
ENG 347 MOD FICTION	1.0	P
	3.0	
2ND TERM 1968-69		
* SOC 408 SEM ON AFRICA	1.0	IC
PHIL 331 SOC PHIL	1.0	A
SOC 306 SOC STRAT	1.0	IC
	3.0	
* TAKEN AT MONMOUTH COLLEGE		
3RD TERM 1968-69		
ENG 324 STUD IN AM LIT	1.0	C
HIST 333 20TH CENT NEGRO	1.0	A
SOC 450 COMP EXAM	1.0	C
	3.0	

THIS STUDENT IS IN GOOD STANDING UNLESS OTHERWISE INDICATED

DENTS SURNAME FIRST MIDDLE ENTRY 9 6 6

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

E AND PLACE OF BIRTH

ECEMBER 11 1948

ULEVILLE MISSISSIPPI

ME AND ADDRESS OF HIGH SCHOOL

T WASHINGTON HIGH SCH

EMPHIS TENNESSEE

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	RANK	1/10	1/4	CEEB VERBAL	MATH	ENG.	FR.	GERM	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST.	ALG-PL. GM	TRIG-SO. GM	CIVICS SOC. ST.	ECON.	POL. SCI	BIO.	CHEM	PHY
6	500	1	1	466	393	4			2			1		3	3				1	1	1

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1966 67				
IOL	121	CELL BIOLOGY	1	C-
NG	101	FRESHMAN ENG	1	C
ATH	151	CALCULUS I	1	D
EW	101	REQ PHYS ED		C
			3	
2ND TERM 1966 67				
IOL	122	BIO DIVERSITY	1	D
NG	222	TYPES FICTION	1	D+
IST	105	WEST CIV	1	D-
EW	102	REQ PHYS ED		C
			3	
3RD TERM 1966 67				
NTH	112	INTRO ANTH	1	C
ATH	152	CALCULUS II	1	C
US	106	INT TO MUS	1	C+
EW	103	REQ PHYS ED		A
			3	
1ST TERM 1967 68				
ECON	201	PRINCIPLES I	1.0	C-
FR	101	ELEM FRENCH	1.0	B-
SOC	201	PRIN OF SOC	1.0	C
			3.0	
2ND TERM 1967 68				
ECON	202	PRINCIPLES II	1.0	B-
FR	102	ELEM FRENCH	1.0	C
PSY	111	INTRO PSYCH	1.0	C-
			3.0	
3RD TERM 1967 68				
ECON	326	INTER TRADE	1.0	C-
FR	103	ELEM FRENCH	1.0	C+
PHIL	115	INT TO PHIL	1.0	B
			3.0	
1ST TERM 1968-69				
ECON	221	ACCT PRIN I	1.0	C+
ECON	302	INCOME ANAL	1.0	C-
ECON	329	TRANSPORTATION	1.0	D
			3.0	
2ND TERM 1968-69				
ECON	222	ACCT PRIN II	1.0	C
ECON	311	BUSINESS LAW	1.0	B
PHIL	331	SOC PHIL	1.0	B-
			3.0	

COURSE DESCRIPTION			CREDIT	GRADE
3RD TERM 1968-69				
ECON	303	STATISTICS	(1.0)	W
ECON	323	MANAGEMENT ACCT	1.0	C
HIST	333	20TH CENT NEGRO	1.0	A
			3.0	
			2.0	

THIS STUDENT IS IN GOOD STANDING UNLESS OTHERWISE INDICATED.

ENT'S SURNAME FIRST MIDDLE

AND PLACE OF BIRTH
NUARY 16 1949
ICAGO ILLINOIS

E AND ADDRESS OF HIGH SCHOOL
RSCH HIGH SCHOOL
ICAGO ILLINOIS

DATE OF ENTRY 9 66

DATE GRADUATED

DEGREE

MAJOR FIELD

HONORS IN

CLASS RANK

KNOX COLLEGE

GALESBURG, ILLINOIS

HIGH SCHOOL UNITS

HIGH SCHOOL CLASS	RANK	1/10	1/4	CEEB VERBAL	CEEB MATH	ENG.	FR.	GERM.	LATIN	RUSS.	SPAN.	AM. HIST.	OTHER HIST	ALG. PL. GM	TRIG. SO. GM	CIVICS SOC. ST.	ECON.	POL. SCI.	BIO.	CHEM.	PHY
7	319	1	1	476	470	4	3					1	2	3					1	1	

COURSE DESCRIPTION			CREDIT	GRADE
1ST TERM 1966 67				
NG	101	FRESHMAN ENG	1	B-
R	103	ELEM FRENCH	1	C+
SY	111	INTRO PSYCH	1	D
EW	101	REQ PHYS ED		B-
			3	
2ND TERM 1966 67				
R	201	INTER FRENCH	1	C+
US	106	INT TO MUS	1	C+
EL	111	GR ID NON CHR	1	D
EW	102	REQ PHYS ED		C+
			3	
3RD TERM 1966 67				
NG	222	TYPES FICTION	1	C+
R	202	READ FR LIT	1	C+
OC	201	PRIN OF SOC	1	C
EW	103	REQ PHYS ED		C
			3	
1ST TERM 1967 68				
EDUC	200	CH DEV LEARN	1.0	A
PSY	201	EXP PSYCH I	1.0	D
SPAN	101	ELEM SPAN	1.0	A
			3.0	
2ND TERM 1967 68				
ENG	223	INTRO TO DRAMA	1.0	B
SOC	203	RACE-ETH RELAT	1.0	B
SPAN	102	ELEM SPAN	1.0	A
			3.0	
3RD TERM 1967 68				
EDUC	309	LG ART EL SCH	1.0	B
PHYS	253	SCI AND SOC	1.0	B-
SPAN	103	ELEM SPAN	1.0	A-
			3.0	
1ST TERM 1968-69				
CHEM	300	CHEMISTRY	1.0	C-
ENG	241	MAST LIT I	1.0	C
ENG	347	MOD FICTION	1.0	B-
			3.0	
2ND TERM 1968-69				
ENG	242	MAST LIT II	1.0	C
ENG	317	AMER LIT I	1.0	B
ENG	345	VICTORIAN LIT	1.0	C-

COURSE DESCRIPTION			CREDIT	GRADE
3RD TERM 1968-69				
EDUC	322	ENG IN SEC SCH	.5	B
EDUC	369	HIST & PHIL	.5	B
EDUC	390	LNG THEO ADOL P	1.0	C
EDUC	391	METH EVAL SEC E	1.0	B
ENG	324	STUD IN AM LIT	1.0	B
HIST	333	20TH CENT NEGRO	1.0	A
			5.0	

ADV FROM ROOSEVELT UNIV, CHICAGO, ILL.
SUMMER 1969:
P S 201 AMER NATL GOVT .9

THIS STUDENT IS IN GOOD STANDING UNLESS OTHERWISE INDICATED

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR B W COOR

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
MARCH 2 1951
ST LOUIS MO

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
582	571	421		SPAN 39

NAME AND ADDRESS OF HIGH SCHOOL
WILLOWBROOK HIGH SCHOOL
VILLA PARK ILL

HIGH SCHOOL		
CLASS RANK	1/10	1/4
17/ 673	1	1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
5.0	0.0	0.0	0.0	0.0	2.0	1.0	1.0	3.0	0.0	2.0	0.0	0.0	2.0	1.0	0.0

1ST TERM 1969-70

SEMR 100	-2	REVOLUTION	1.0 *
BIOL 201		STRUCTURAL BIOL	1.0 *
MATH 131	-2	PRE CALCULUS	1.0 *
PEM	-5	INTERCOLL ATH	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR R C N MCCONSTLE

DATE ENTERE
9 69

NAME

DATE AND PLACE OF BIRTH
AUGUST 3 1951
CHICAGO ILL

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LAN
545	596	550		FREN 6

NAME AND ADDRESS OF HIGH SCHOOL
MERCY HIGH SCHOOL
CHICAGO ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
14/ 246 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHY
4.0	4.0	0.0	0.0	0.0	0.0	1.0	1.0	3.0	1.0	1.0	0.0	0.0	1.0	0.0	0.

1ST TERM 1969-70

SEMR 100	-F	REVOLUTION	1.0 *
FR 201	-2	INTER FRENCH	1.0 *
MATH 151	-2	CALCULUS I	1.0 *
PEW	-Y	VOLLEYBALL MIX	.0 *

EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR CARL HILLNS

DATE ENTERED
9 62

NAME

DATE AND PLACE OF BIRTH
NOVEMBER 4 1951
CARROLLTON MISS

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	ENG LANG
276	387	432		ENGN 2

NAME AND ADDRESS OF HIGH SCHOOL
MARSHALL HIGH SCHOOL
N CARROLLTON MISS

HIGH SCHOOL
CLASS RANK 1/10 1/4
0/ 31 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	3.0	0.0	0.0	0.0	2.0	1.0	1.0	1.0

1ST TERM 1969-70

SHMR	100 -M	REVOLUTION	1.0 *
FR	101 -1	ELEM FRENCH	1.0 *
MATH	121 -1	PRE CALCULUS	1.0 *
PEM	-J	BEG TENNIS	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR CARL HELMS

DATE ENTERE
9 69

NAME

DATE AND PLACE OF BIRTH
DECEMBER 8 1949
SHAW MISS

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LAN
				SPAN 2

NAME AND ADDRESS OF HIGH SCHOOL
HYDE PARK H S
CHICAGO ILL

HIGH SCHOOL		
CLASS RANK	1/10	1/4
152/ 515	3	2

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	3.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

CHICAGO CITY COLLEGE
1968 69

BIOL 121		CELL BIOLOGY	.9
BIOL 122		BIO DIVERSITY	.9
ENG 101		FRESHMAN ENG	.9
ENG		AM NEGRO LIT	.9
		SOC SCI I	.9
		SOC SCI II	.9

1ST TERM 1969-70

SENR 100	-0	REVOLUTION	1.0 *
SPAN 101	-2	ELEM SPAN	1.0 *
PEM	-1	GYMNASTICS MIX	.0 *

CHICAGO CITY COLLEGE
1968 69

BIOL 121		CELL BIOLOGY	.9
BIOL 122		BIO DIVERSITY	.9
ENG 101		FRESHMAN ENG	.9
ENG		AM NEGRO LIT	.9
		SOC SCI I	.9
		SOC SCI II	.9

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR PETER SCHRAMM

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
DECEMBER 11 1951
CHICAGO ILL

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
299	492		439	FREN 32

NAME AND ADDRESS OF HIGH SCHOOL
EMIL G. HIRSCH H S
CHICAGO ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
5/ 348 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOCM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	2.0	0.0	0.0	0.0	0.0	1.0	2.0	3.0	1.0	0.0	0.0	0.0	2.0	1.0	1.0

1ST TERM 1969-70

SEMR	100	-R	REVOLUTION	1.0 *
CHEM	101	-2	GEN CHEM	1.0 *
MATH	131	-1	PRE CALCULUS	1.0 *
PEW.		-3	BOWLING MIXED	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR JORGE PRATS

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
OCTOBER 14 1951
CHICAGO ILL

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
512	435	333		SPAN 78

NAME AND ADDRESS OF HIGH SCHOOL
MERCY HIGH SCHOOL
CHICAGO ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
26/ 246 2 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOLM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	0.0	0.0	0.0	0.0	4.0	1.0	0.0	2.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0

1ST TERM 1969-70

SEMR 100	-S	REVOLUTION	1.0	*
SOC 201		INTRO TO SOC	1.0	*
SPAN 201	-3	INTER SPAN	1.0	*
PEW	-Y	VOLLEYBALL MIX	.0	*

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR D W GREEN

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
MAY 9 1952
BOSTON MASS

CEEB VERB	CEEB MATH	ACHIEVEMENT TEST SCORES MATH I	MATH II	FOR LANG
542	575	498		FREN 38

NAME AND ADDRESS OF HIGH SCHOOL
EMIL G. HIRSCH H S
CHICAGO ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
15/ 348 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG FLGM	TRIG SOGM	CIVICS SOC ST	ECON	PCL SCI	BIO	CHEM	PHYS
4.0	3.0	0.0	0.0	0.0	0.0	1.0	2.0	3.0	1.0	0.0	0.0	0.0	2.0	1.0	1.0

1ST TERM 1969-70

SEMR 100	-R	REVOLUTION	1.0 *
CHEM 101	-2	GEN CHEM	1.0 *
MATH 131	-1	PRE CALCULUS	1.0 *
PEM	-P	RIFLE MARKS MIX	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR D. M MOORE

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
MAY 15 1952
CHICAGO ILL

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
446	530		565	LAT 49

NAME AND ADDRESS OF HIGH SCHOOL
WENDELL PHILLIPS H S
CHICAGO ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
6/ 375 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST.	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	PCL SCI	BIO	CHEM	PHYS
4.0	0.0	0.0	2.0	0.0	0.0	1.0	1.0	3.0	2.0	1.0	0.0	0.0	1.0	1.0	1.0

1ST TERM 1969-70

SEMR 100	-8	REVOLUTION	1.0 *
MATH 131	-2	PRE CALCULUS	1.0 *
PS 201		AM NATL GOVN	1.0 *
PEM	-W	CHOICE ACTIV	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR. J D FITZGERALD

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
NOVEMBER 4 1951
CHICAGO ILL

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
394	298	390		FREN 39

NAME AND ADDRESS OF HIGH SCHOOL
CRANE HIGH SCHOOL
CHICAGO ILL

HIGH SCHOOL CLASS RANK	1/10	1/4
20/ 756	1	1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	2.0	0.0	0.0	0.0	0.0	1.0	2.0	3.0	0.0	2.0	0.0	0.0	1.0	1.0	0.0

1ST TERM 1969-70

SEMR	100	-K	REVOLUTION	1.0 *
HIST	104	-G	WEST CIV	1.0 *
SOC	201		INTRO TO SOC	1.0 *
PEM		-V	CHOICE ACTIV	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

DATE ENTERED
9 69

DVISER
MR K R PAISL

AME

ATE AND PLACE OF BIRTH
JUNE 25 1951
GREELEY CO

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
538	455	409		GERM 58

AME AND ADDRESS OF HIGH SCHOOL
NEW TRIER WEST HS
NORTHFIELD ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
284/ 509 6 3

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC	ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	0.0	3.5	0.0	0.0	0.0	2.0	0.5	3.0	0.0	1.0		0.0	0.0	1.0	1.0	0.0

1ST TERM 1969-70

GERMR	100	-K	REVOLUTION	1.0 *
SOC	201		INTRO TO SOC	1.0 *
SPAN	101	-3	ELEM SPAN	1.0 *
PEW		-2	DANCE MIXED	.0 *

KRUX COLLEGE

EDUCATIONAL DEVELOPMENT RECORD

11/10/69

DATE ENTERED
9 69

DVISER
MR P D YOUNG

AME

ATE AND PLACE OF BIRTH
OCTOBER 12 1951
KANSAS CITY MO

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
438	499	487		FREN 35

AME AND ADDRESS OF HIGH SCHOOL
GLENVILLE HIGH SCHOOL
CLEVELAND OHIO

HIGH SCHOOL		
CLASS RANK	1/10	1/4
116/ 390	3	2

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	3.0	1.0	1.5	0.5	0.0	1.0	1.0	1.0

1ST TERM 1969-70

ENR 100	-0	REVOLUTION	1.0 *
IST 104	-2	WEST CIV	1.0 *
PCH 231		ACTING	1.0 *
EM	-5	INTERCOLL ATH	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
FR R G KOCSER

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
JULY 14 1951
CHARLESTON W VA

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
591	577	525		FREN 46

NAME AND ADDRESS OF HIGH SCHOOL
WOODROW WILSON H S
WASHINGTON D C

HIGH SCHOOL
CLASS RANK 1/10 1/4
173/ 454 4 2

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	2.0	0.0	2.0	0.0	0.0	1.0	1.0	3.0	0.0	1.5	0.0	1.0	1.0	0.0	0.0

1ST TERM 1969-70

SEMR 100	-H	REVOLUTION	1.0 *
HIST 104	-4	WEST CIV	1.0 *
SOC 201		INTRO TO SOC	1.0 *
PEW	-Y	VOLLEYBALL MIX	.0 *

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
11/10/69

ADVISER
MR T LUNDGREN

DATE ENTERED
9 69

NAME

DATE AND PLACE OF BIRTH
NOVEMBER 26 1950
JUNCTION KS

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
321	396	343		FREN 31

NAME AND ADDRESS OF HIGH SCHOOL
W. H. WELLS HIGH SCHOOL
CHICAGO ILL

HIGH SCHOOL		
CLASS RANK	1/10	1/4
14/ 292	1	1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	2.0	0.0	0.0	0.0	0.0	2.0	1.0	3.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0

1ST TERM 1969-70

SEMR 100	-B	REVOLUTION	1.0 *
ART 103		FORM AND EXP	1.0 *
BIOL 220		HUMAN ECOLOGY	1.0 *
PEW	-Y	VOLLEYBALL MIX	.0 *

COMPARISON OF GRADES REPORTED FOR STUDENTS OPTING FOR THE PASS-FAIL SYSTEM, 1968-69, COMPARED WITH GRADES REPORTED FOR STUDENTS OPTING FOR SATISFACTORY-UNSATISFACTORY GRADES, 1969-70

George L. Melville
April, 1970

The accompanying tables contrast the percentage distribution of grades reported for students opting for a satisfactory-unsatisfactory grade during the fall and winter terms 1969-70 with the percentage distributions of grades reported for juniors and seniors the year before the decision to change the pass-fail option to a satisfactory-unsatisfactory option. The grade distribution of students taking the satisfactory-unsatisfactory option is much superior to the distribution of grades formerly reported for students taking courses pass-fail.

When the decision to change the pass-fail system to a satisfactory-unsatisfactory system was made, fear was expressed that many faculty would not report D's for students declaring majors outside their fields since such students might conceivably lose credit for the course. In this case we might have expected to find a higher percentage of C's and a smaller percentage of D's reported for students opting s-u than was the case for students opting pass-fail. Actually, the data indicate a substantial fall in the percentage of D's reported and a modest fall in the percentage of C's reported as well. It was the percentage of B's which rose, a percentage which now compares favorably with the percentage of B's reported for juniors and seniors not taking courses s-u. The change from the pass-fail system to the s-u system appears to have affected student motivation in these courses favorably.

If one now contrasts the distribution of grades reported for s-u students with the distribution of grades generally reported for juniors and seniors one finds a higher percentage of C's and F's and a lower percentage of A's for

the former group. This is to be expected since the s-u students are taking courses outside their major field while the grade distribution for all juniors and seniors includes grades in the major fields.

In 1968-69, 135 students opted for a pass-fail grade during the fall term while 158 students took this option in the winter term. During the first two terms this year 152 students waived conventional grades, a decrease of forty-eight per cent. If one compares only the winter terms of the two academic years the decrease in these waivers was fifty-eight per cent.

It may be that the decrease in the percentage of students taking courses on a non-conventional grading system is that the s-u system is less attractive to students than the pass-fail system; i.e., students fear a loss of credit under s-u which they did not feel in the pass-fail system. On the other hand, the substantial percentage decrease may be explained by the advent of the numerous courses being taught on an s-u basis at the option of the instructor.[1] Thus, the student going to graduate school may fear his record will be viewed unfavorably if it contains too many S's.

Of those students who opted for a course on an s-u basis this fall, twenty-five per cent had an upperclass index equal to or greater than 3.50. The comparable percentage of those students electing s-u grades in the winter term was eighteen per cent. A chi-square test run on the data presented in

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[1] When the proposal to permit s-u grades for all students in specific courses was presented to the faculty it was argued that the Instruction Committee should permit this option in special teaching situations where such grades were appropriate; e.g., with such teaching methods as had been devised by Messrs. Atwater, Moon and Pahel. The Instruction Committee, however, apparently makes no attempt to evaluate special circumstances, allowing instructors a free option of an s-u system. This means that many more courses are taught on this basis than were envisioned when the faculty adopted the program.

Table III indicates that the hypothesis that the differences in these percentages can be explained by random variation cannot be rejected. (Chi-square = $1.48 < 6.64$; n = 1) Thus, while it is true that the percentage of very good students who opted for s-u fell in the winter term we cannot safely predict from these data a trend away from s-u by the very good student. The data do indicate that we should obtain similar observations in up-coming terms.

The above data support the decision of the Academic Status Committee to recommend that the option for s-u grades be extended to sophomores and third term freshmen under similar conditions to those existing for juniors and seniors.

The data do not relate in any way to the grades of students taking courses graded s-u at the option of the instructors. Pending an analysis of grades reported in such courses and in light of the faculty's concern that we have seen indiscriminate experimentation with s-u reporting by some faculty, the Instruction Committee might rescind the general option for s-u it has given faculty and decide individual cases on their merits.

George Melville
April, 1970

TABLE I

PERCENTAGE DISTRIBUTION OF GRADES TURNED IN FOR STUDENTS TAKING COURSES PASS-FAIL COMPARED TO THE PERCENTAGE DISTRIBUTION OF GRADES TURNED IN FOR STUDENTS TAKING COURSES ON A REGULAR BASIS, JUNIORS AND SENIORS, KNOX COLLEGE, SPRING TERM, 1967-68 TO SPRING TERM, 1968-69

Grade	Per Cent Pass-Fail	Per Cent Regular
A	6.0	25.3
B	29.3	39.8
C	44.2	27.9
D	17.3	5.5
F	3.2	1.5
Totals	100.0	100.0

Source: Office of Institutional Research
Knox College, April, 1969

TABLE II

PERCENTAGE DISTRIBUTION OF GRADES REPORTED FOR STUDENTS DECLARING THE SATISFACTORY-UNSATISFACTORY OPTION, FALL AND WINTER TERMS, 1969-70

Grade	Percentages Fall	Winter	Percentage Combined
A	14.0	4.7	10.5
B	43.0	38.6	42.1
C	34.9	41.4	38.8
D	5.8	4.3	5.3
F	2.3	4.3	3.3
Total	100.0	100.0	100.0
Number of Students	86	66	152

Source: Office of Institutional Research
April, 1970

TABLE III

CONTINGUENCY TABLE: STUDENTS OPTING FOR S-U, CLASSIFIED BY UPPERCLASS GRADE INDEX, FALL AND WINTER TERMS, KNOX COLLEGE, 1969-70

Upperclass Index	Fall Term	Winter Term	Total
Less than 3.50	65	55	120
3.50 and above	23	12	35
Total	88	67	155

Source: Office of Institutional Research
Knox College, April, 1970

$$\chi^2 = \frac{(65 - 68.129)^2}{68.129} + \frac{(55 - 51.871)^2}{51.871} + \frac{(23 - 19.871)^2}{19.871} + \frac{(12 - 15.129)^2}{15.129}$$

$$\chi^2 = 1.48 < 6.635 \; ; \; n = 1$$

A chi square test obtains the squared differences between observed and theoretical frequencies in units of the theoretical frequencies. In the present instance the theoretical frequencies are obtained on the hypothesis that fall and winter term enrollment s-u is independent of the upperclass index classification. If this hypothesis is correct the probability that the sum of the ratios obtained will be 6.635 or more is one in one hundred. Since the sum of the ratios obtained is only 1.48 it appears that the theoretical frequencies obtained from our hypothesis do not differ significantly from the actual frequencies observed.

FIRST TERM GRADES, TWO GROUPS OF AWR STUDENTS
FALL, 1967

AWR I			AWR II			
Student	Grades	Index	Student	Grades		Index
	C+, B, C	2.33		D, F, D+	Math 151	.67
	C, C, C	2.00		C-,C, F	Math 151	1.33
	C-, B-,D	2.00		D-,C, D	Soc 201	1.33
	C-, C, C	2.00		D, C-,D	Math 151	1.33
	C, B-,C+	2.33		B-,B-,C	Math 151	2.67
	D-, F, C	1.00		D+,D, B	Math 151	1.82
	D, C-,D	1.33		C, D+,D-	Sequence	1.33
	C, B-,C	2.33		B, A-,C+	Eng 223	3.00
	D-, C+,C-	1.67		F, B, C	Soc 201	1.67
	D, C, C-	1.67		D, C, B+	Econ 201	2.00
	B-, C-, B-	2.67		C-,C+,B-	Sequence	2.33
	C+, C+,C	2.00		B-,B, D-	Math 151	2.33
	D+, C+,B	2.00		C+,C, B	Math 151	2.33
	D, WF, F	.33		C-,C+,C+	Anth 201	2.00
	C, C-, C	2.00		C, C+,B	Anth 201	2.33
	C-,C, D	1.67		C, C-,C	Sequence	2.00
	B, D+, A	2.67		C, C+,C	Anth 201	2.00
	C, C+, A-	2.67				
	B, D, C	2.00				
	C-,C-,D+	1.67				
	D, C, B+	2.00				
	D-,C, B+	2.00				
	D, C+,D	1.33				
	F, D-,D	.67				
	B, D, C	2.00				
	D+,WX,C	1.50				
	C+,D, I	1.50				
	C-,A, C+	2.67				
	D-,D, D	1.00				
	C, D, F	1.00				
	C-,C+,C	2.00				
	C, C, B	2.33				
	F, I, F	---				
	C, D+,D	1.33				
Total		1.78	Total			1.90

APPENDIX XXVII

MONMOUTH • ILLINOIS 61462
TELEPHONE: 309·734-3161

MONMOUTH COLLEGE

FOUNDED • 1853

15 November 1967

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

The following information is forwarded as a progress report on Institutional Research to be initiated in accordance with the CORD grant:

Three proposals are in progress which will be made as candidates for "seed grant" money.

1. Biology. The biology staff plans to initiate a study involving the effectiveness of an Audio-Tutorial system in the biology laboratory to enhance the teaching of the elementary courses in college biology. This will involve a booth for four students, each having access to a player-recorder and technicolor loop films. A comparison is to be made with current laboratory teaching techniques and the proposed innovations to determine the feasibility of expanding such a system at Monmouth College.

2. Music. Mr. Peter Hill wishes to do a pilot study on a kinesthetic and sensory approach to the teaching of instrumental techniques--especially woodwinds. This method places audio in a secondary role. The levels of instruction will involve: a. Beginners (grades 4,5,6), b. Intermediate (grades 7,8,9), and c. Advanced (grades 10,11,12 and college). Indications are strong that this will lead to a large-scale proposal.

3. Spanish. Dr. Guillermo plans a pilot study concerning the teaching of spanish employing common objects, colored blocks, and various teaching aids using experimental classes of elementary pupils ages six through nine years.

There are two more proposals under consideration, but not sufficiently formulated to be presented at this time.

Very truly yours,

Jim

James H. McAllister, Director
Institutional Research

MONMOUTH • ILLINOIS 61462
TELEPHONE 309-734-3161

MONMOUTH COLLEGE

FOUNDED • 1853

March 22, 1968

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

The following information is forwarded as a progress report on Institutional Research in accordance with the CORD grant:

1. A study has been made for the Monmouth College Department of English involving 155 English 101 students for first term 1967-8 to present a profile to determine placement of incoming freshmen in honors sections of freshman English. Sample means and standard deviations for the groups of students receiving A's, B's, and C+'s were determined using SAT scores in class intervals of 25. A grade distribution histogram was also prepared for each member of the Department teaching this course showing the percent of A's, B's, and C+'s given. Additional work is to be done to determine a correlation of SAT scores, high school rank, and term grades using the entire grade distribution for the first term.

2. Student retention and attrition studies for a report to the State of Illinois Board of Higher Education.

A study of the beginning freshmen at Monmouth College for the years 1960 and 1965 was made. A listing of name, home address, last term of attendance, and reason for leaving Monmouth College was made for all members of the 1960 matriculant group who were not graduated in June 1964. This procedure was repeated for the members of the 1965 matriculant group who were not in attendance at Monmouth College through June 1967.

3. An inventory of faculty teaching loads for first term 1967-8 was compiled listing name and number of each class taught by every faculty member teaching at Monmouth College, number of students enrolled, number of credits for each class, and the total number of student credit hours. This information is to be presented to the North Central Accreditation Reviewing Team during the 1968 visitation.

4. A compilation of full-time faculty equivalent has been made from 1960 to date to be used for studies concerning faculty load, grade distribution, student-faculty ratio, etc.

5. A classroom utilization study was conducted as a portion of a report filed with the State of Illinois Board of Higher Education. Information collected for this report will be useful in the future allocation of classroom and laboratory facilities.

6. Seed Grant Proposals.

a. Professor Charles E. Wingo received a $500 CORD Research Program grant for the purpose of developing video tapes on word recognition skills.

b. Professor Donald Wills has presented a preliminary draft for a proposal to develop a series of video tape and 8-mm film presentations of geological formations. The completed proposal will be presented on or about April 1, 1968.

c. The pilot study to be proposed by Mr. Peter S. Hill on a kinesthetic and sensory approach to the teaching of instrumental techniques is still being formulated and should be presented by May 1, 1968.

d. A tentative proposal is being considered by members of the Physics Department.

7. In preparation for the Institutional Research to be conducted during the summer of 1968, student information is being compiled and key-punched at the Monmouth College Data Processing Center for subsequent utilization through the Knox College Digital Computer Center. Approximately 16 hours of key-punch time will have been utilized by the end of March, 1968. Sufficient cards will be punched during the third term to furnish the necessary data to determine grade point average and academic status of each student currently enrolled.

8. Proposed activities for the 1968 summer employment period:

a. Development of the card formats necessary to complete the file on each student currently enrolled at Monmouth College so that necessary data can be obtained through the Knox College Computer Facilities for Institutional Research.

b. Prediction studies of academic success based on admissions information.

c. Studies of academic success of readmitted students and also transfer students.

d. Continue collection of information on faculty teaching load and grade distribution.

e. Continue attrition studies.

f. Begin processing data cards on Monmouth College alumni for future studies.

Very truly yours,

James H. McAllister

James H. McAllister, Director
Institutional Research

JMc/mb

MONMOUTH • ILLINOIS 61462
TELEPHONE: 309-734-3161

MONMOUTH COLLEGE

FOUNDED • 1853

February 25, 1969

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

There follows a progress report on Institutional Research in accordance with the CCAD Grant for the period from 1 July 1968 through 31 December 1968:

1. The development and revision of the card formats for student master and academic status cumulative-to-date cards was accomplished during the summer months. During the third term of the 1967-8 academic year, a computer program was designed to process the student course card and produce the academic status card. This program was revised to indicate the probationary status of a student due to his cumulative grade point average, (G.P.A.), current term G.P.A., or both. Also, when his total college credits so indicate, the student's classification is automatically updated. The revised program was successfully employed at the completion of the 1968 summer session and, with slight modifications, produced the first comprehensive report to the Dean of the College at the completion of the first term of the 1968-9 academic year.

2. From the compiled academic data, this office prepared punched cards which were forwarded in July to the Validity Study Service, College Entrance Examination Board, Evanston, Illinois. This information was then analyzed to determine the significance of predictors for first year grade point averages of Monmouth College freshmen entering first term 1968-9. The information obtained from this agency will be used for future studies by the Monmouth College Office of Institutional Research.

3. The student master cards were used for the first term registration, 1968-9, to provide the birthdates for student I.D. cards. The

academic status cumulative-to-date cards now make possible the listing of term and cumulative G.P.A. of students by sex, class, fraternity or sorority, and declared departmental major.

4. Provision was also made in the revised computer program to recalculate any changes in course credits and/or grade points for students who repeat Monmouth College courses. Since the number of courses repeated were in excess of fifty for the first term, the time saved from the previously required transcript search was appreciable.

5. A card for each "I" and "IP" grade is produced as a by-product of the academic status card. A print-out of the student name, course, and grade is then furnished to the Registrar so that he can notify the student and instructor concerned of the necessary action to be taken to insure replacement of the "I" or "IP" within the specified time period.

6. The academic status card is now used to prepare the list of honor students for each Honors Convocation and to determine the eligibility of students for Financial Aid.

7. A report was prepared for the Chairman of the Athletic Department which included the following: G.P.A. for each term of 1967-8, and also cumulative G.P.A. for that year, of all male students participating in freshman or varsity athletics; the same information was compiled for all male freshman, sophomore, junior, and senior students enrolled in Monmouth College. This information is to be used by the Athletic Department to compare the academic status of male Monmouth College students participating in athletics with the male population of Monmouth College students by class.

8. The grade distribution report for third term, 1967-8 was prepared and forwarded to the Dean of the College. This report reflects all grades submitted to the Registrar for each course taught by a faculty member. These results were then condensed to show totals of all grades submitted by each faculty member in a department, each department in a division, and the grade distribution of the College. At the departmental level the grade distributions were also shown as percents, including a breakdown of full, fractional, and non-credit courses.

9. Altho not completed during the time period of this report, the first term, 1968-9 grade distribution report has been prepared and submitted. There is a considerable time lapse between the processing of the student course cards and the receipt of the final grade report from which the grade distribution is prepared. The feasibility of replacing this manual operation by a computer program is being considered.

10. Seed Grant Proposals

a. A $500 CORD Research Program Grant has been awarded to Mr. George L. Waltershausen, Instructor, Art Department, for the purpose of developing audiovisual material as media for design instruction in elementary college art courses.

b. Mr. John E. Nichols, Registrar, received a $500 CORD Research Program Grant to develop methods which will provide more effective utilization of the services of Data Processing, Institutional Research, and the Office of Registrar of Monmouth College, which might be applicable to other small liberal arts colleges.

11. A summary of expenditures for the first six months of operation has been forwarded under separate cover.

Very truly yours,

James H. McAllister

James H. McAllister, Director
Institutional Research

JHM/mb

MONMOUTH • ILLINOIS 61462
TELEPHONE: 309•734-3161

MONMOUTH COLLEGE
FOUNDED • 1853

July 1, 1969

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

A brief summary of the activities of this office in accordance with the CORD Grant for the second year of participation is presented in this letter.

1. A revision of the Cumulative-to-date Academic Status card format was accomplished which will include the recording of the Satisfactory-Unsatisfactory grade which is to be used at Monmouth College for the 1969-70 academic year. (See inclosure 1).

2. The format for the Academic Register card (card code 8) was established from the Student Master card (card code x) and the Academic Status card. The format is compatible with that of the card used by Knox College so that statistical studies may be made during the coming year utilizing the same computer program. (See inclosure 1). Data for the card which is not included in the "x" and "2" cards is being recorded for inclusion in the "8" card this fall.

3. The Academic Status Report prepared at the close of each term has been extended to list the probation status of each student, whether or not the student is repeating a course, and indicates if an "incomplete" (I) or an "in progress" (IP) grade was received. From this list, the Dean of the College is able to prepare more efficiently the necessary letters of warning or dismissal due to poor academic standing.

4. A Grade Report is now made to each student showing his cumulative-to-date academic status. It is prepared by the Data Processing Office and any questions concerning the accuracy of any listing can be made by the student concerned. This has helped correct and up-date the files, where before only an entire transcript check of each student could be made by this office for checking purposes. This has been very beneficial in the correction and up-dating of the "2" card. The Registrar has developed a form to be used by anyone initiating a change in the academic status file. It has proved to be extremely valuable to all concerned.

5. A grade distribution report is made to the Dean of the College after the completion of each term, listing all grades issued by each member of the faculty in each class taught in a department. A consolidation is then made showing the distribution of grades of each member of the faculty in each department, and finally a distribution of all grades issued at Monmouth College. The percents per faculty member per department are also calculated and a copy with names deleted is included in this report. (See inclosure 2).

6. From the grade distribution report, various studies will be made concerning grade point averages in selected courses. This report will also be used to determine space utilization and anticipated enrollments in the various classes.

7. The seed grants awarded to Professor Wingo of the Education Department and Mr. Hill of the Music Department have been completed and the final reports will be forwarded during the summer. Each project has produced some significant results and requests for larger grants are planned. Professor Wills, Department of Geology, is preparing a report for his project and plans to complete it by fall.

8. A request for a seed grant is being prepared by Professor Milton Bowman of the Biology Department which will concern the prediction of the number of Monmouth College Students choosing Biology to fulfill the Science Distribution requirement and those who may continue as Biology majors.

9. A summary of expenditures for the period January 1 through June 30, 1969 is included as inclosure 3. Inclosure 4 is the total expenditures of the fiscal year 1968-9.

Very truly yours,

Jim

James H. McAllister, Director
Institutional Research

JHMc/mb

MONMOUTH • ILLINOIS 61462
TELEPHONE: 309-734-3161

MONMOUTH COLLEGE
FOUNDED • 1853

7 January 1970

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

The following progress report on Institutional Research in accordance with the CORD Grant from 1 July 1969 through 31 December 1969 is submitted:

1. The grade distribution report for the third term, 1968-9, was completed and forwarded to the Dean of the College. This report (reference par. 5, progress report letter for 1968-9 dated 1 July 1969) reflects the distribution of grades of each faculty member in each department both in actual numbers and also in percent.

2. From the above-mentioned information an analysis of teaching loads was prepared and forwarded to the Dean of the College. This report reflected the number of registrations per term (full course equivalents were calculated for fractional credits) for each department, total registrations per department for the year, faculty full time equivalent, and the ratio of the full course equivalent to the faculty full time equivalent (FCE/FFTE) (See inclosure #1).

3. All pertinent information for the #x, 2, and 8 cards was obtained from the admission records for incoming freshmen and transfer students. This was punched in the appropriate cards in preparation for the 1969-70 academic year. The #8 card was established and is in the process of being updated.

4. A comparative review of the #2 card information with the official college transcript has been in progress from 1 July to date. A file of all #8 cards of students who have been graduated since the beginning of the 1967-8 academic year is being prepared and will be updated continually for future reference and research.

5. All current official college transcripts of Monmouth College students have been placed on microfilm. The ID and name of each student has been punched on a data processing card, called the aperture card, and the appropriate microfilm of the transcript is mounted thereon so that any required transcript can be reproduced with minimum effort. This office has assembled additional required information for the 1969 graduates and prepared a dummy deck ready for transfer to the aperture card. This will be standard procedure for each future Monmouth College graduate.

6. A considerable amount of data imputs was collected during the past few months for examination by a special committee which met during the Christmas recess at Hamilton, New York. This particular study involved such information as number of students per class, transfer students, SAT scores and high school class ranks, faculty teaching loads, student credit hours, total number of courses, and sections offered each term by department for each course level (100, 200 etc.) for selected years.

7. A Unit Cost Study for Non-Public Institutions of Higher Education in the State of Illinois will be initiated in January. The Controller has requested the assistance of this office in the preparation of necessary forms and in acquiring and assembling data.

8. Professor Wingo of the Education department completed the basic study outline in his seed grant proposal and is preparing a proposal requesting a $10,000 grant for continuation and expansion of the research. Mr. Hill of the Music department has completed his project, but is still in the process of completing his final report. He plans to request a similar amount for continued research. Three additional grants are still in progress.

9. Dr. Milton Bowman of the Biology department is working with this office to prepare a final draft for a seed grant concerning registrations of students in college biology as a fulfillment of the science requirement.

10. A summary of expenditures for the period 1 July through 31 December 1969 is included.

Very truly yours,

James H. McAllister

James H. McAllister, Director
Institutional Research

JHM/mb

TEACHING LOADS 1968-69

Term	Registrations 1	2	3	Total	Full Course Equiv. 1	2	3	Total	Faculty FTE	FCE/FFTE
Department										
Art	256	276	317	849	175.5	200.5	232.0	608	4	152
Bible & Rel.	173	144	173	490				490	2.5	196
Biology	212	257	111	580				580	4	145
Chemistry	106	95	67	268				268	5	53.6
Classics	39	-	48	87				87	0.5	174
Economics	251	288	256	795				795	5.75	138.3
Education	174	244	220	638	152.5	222.5	220	595	3.375	176.3
English	510	483	445	1438				1438	8.75	164.3
French	175	170	106	451				451	3.125	144.3
Geology	121	61	55	237				237	2	118.5
German	97	66	44	207				207	2	103.5
Government	225	172	221	618				618	2.625	235.4
Greek	1	15	-	16				16	0.375	42.7
History	284	341	350	975				975	4.625	210.8
Japanese	21	19	22	62				62	1.25	49.6
Latin	38	34	35	107				107	0.75	142.7
Mathematics	269	237	218	724	269	220.4	203.3	692.7	6.125	113.1
Music	160	179	161	500	72	84.8	80.0	236.8	4.5	52.6
Philosophy	79	154	135	368				368	2.125	173.2
Physical Ed.	805	577	711	2093	69	54	98	221	6.375	34.7
Physics	87	83	35	205				205	4	51.1
Psychology	230	181	155	566				566	3.5	161.7
Russian	9	7	6	22				22	0.375	58.7
Sociology	269	192	263	724				724	3	241.3
Spanish	218	197	109	524				524	2.625	199.6
Speech	205	240	236	681	170.5	195.8	194.2	560.5	3.75 Incl. #1	149.5

7 January 1970

SUMMARY OF EXPENDITURES

CORD GRANT

MONMOUTH COLLEGE
1 July - 31 December, 1969

Federal

Director		$1,612.00
Secretary		1,786.20
Key Puncher		331.56
Data Processing		
Operator Time	$263.40	
Equipment	214.24	
1130 Computer	53.60	
Cards and Paper	50.00	
Calculator Rental	120.00	
Typewriter Rental	30.00	
		731.24
Telephone	$ 5.60	
Consultant Fees		
Travel & Meals	7.25	
Materials & Duplicating	19.00	
		31.85
		$4,492.85

Local

Machine Room Overhead	$ 32.07
Social Security (Employer's Share)	100.94
	$133.01

James H. McAllister
James H. McAllister, Director

Robert M. Steller
Robert M. Steller, Controller

Incl. #2

CORE Expenditures 1 July - 31 December 1969

Hours of operation:	Instl. Rsch.	Data Proc.	Total
Key Punch	70	180	250
Sorter	15	75	90
Collator	2	13	15
403	10	40	50
514	2	15	17
	99	323	422

Operator Cost

Key Punch	180 x $1.842 = $ 331.56
D. P. Machines	143 x $1.842 = $ 263.40
	$ 594.96

Data Processing Equipment, M. C.

			Overhead	
Key Punch	250 x .402 =	$ 100.50	250 x .060 =	$ 15.00
Sorter	90 x .273 =	24.57	90 x .041 =	3.69
Collator	15 x .585 =	8.77	15 x .088 =	1.32
403	50 x1.50 =	75.00	50 x .225 =	11.25
514	17 x .318 =	5.40	17 x .048 =	.81
		$ 214.24		$ 32.07

1130 Computer, Knox College: 4 hrs. @ $13.40* = $53.60

Monroe Calculator Rental 1 July 69 - 31 December 69
6 mo. x $20/mo. = $120.00

Typewriter Rental
6 mo. x $ 5/mo. = $ 30.00

*Includes operator time and overhead

Incl. #3

LAKE FOREST COLLEGE
LAKE FOREST, ILLINOIS

INSTITUTIONAL RESEARCH - PROPOSED PROJECTS 1968-69

1. RETENTION STUDY - BLACK STUDENTS

   During the 1967-68 year no black student was lost for academic reasons. What factors contributed to this situation?

2. RETENTION RATE - CULTURALLY DISADVANTAGED WHITES

   A study of the rate of loss. We hope to develop an experimental version of a scale to measure the extent of cultural deprivation.

3. THE INTERVIEW AS AN ADMISSIONS TECHNIQUE

   During 1967-68 the evaluations based on interviews have been made. We propose to do the statistical work necessary to establish whether the interview has any validity in selection.

4. TEST SCORES AS PREDICTORS

   In the last three years the correlation between SAT scores and grades has been very low (.30 or less). We will attempt to analyze why this is true at Lake Forest.

5. RETENTION RATE - WOMEN

   While we lose very few women because of academic dismissal, we lose a large number for other reasons. We will try to study why this is true.

6. DRUGS - CONTINUED (Marijuana)

   We propose to study the usage in the new freshman class.

7. DRUGS (LSD, SPEED, Amphetamines, etc.)

   In a study similar to the marijuana one, we propose to learn the extent of usage in the student body.

8. DRUGS - KNOWLEDGE

   While some of the facts about marijuana, LSD, etc., are in dispute, we intend to learn something about the extent of knowledge that students have about them.

9. PARENTAL ATTITUDE VERSUS STUDENT ATTITUDE

The generation gap has often been acknowledged. We propose to take a sample of about 100 cases and attempt to establish whether in fact a strong attitudinal gap exists with respect to principles of government rather than specific issues. E.G., the Viet Nam War may be viewed as an issue whereas civil disobedience and its place in society may be thought of as a principle.

10. THE ACTIVIST

We plan to identify by pooled judgment the 50 or so most active (on and off campus) and see whether they have any pattern of characteristics that is essentially dissimilar to the regular student body.

11. COMMUNICATIONS

We will attempt to establish the degree to which students communicate with those of persuasions different from their own.

CHANGING TRENDS IN ATTRITION RATES AT KNOX COLLEGE

Office of Institutional Research
Knox College, February, 1970

Dr. George L. Melville, Director

Special Report

Project Number: 7-E-178X

Grant Number: OEG-1-7-070178-4299 (010)

CHANGING TRENDS IN ATTRITION RATES AT KNOX COLLEGE

A Report by

George L. Melville, Director
Office of Institutional Research

Knox College

March 4, 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.

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Appendix: Attrition of Students Entering in the Fall of 1968... x

This report will analyze the changes in attrition rates for Knox College students which have occurred over the last ten years for which we have complete data. The accompanying charts detail the first and second year cumulative percentage attrition rates for freshmen entering Knox College from the fall of 1958 to the fall of 1967. The data for this ten year period are classified by sex and academic performance, the latter classification distinguishing students dropping out with less than a C average from drop-outs achieving a C average or better.

Prior to 1958 two of every three female students dropping out of Knox College were doing satisfactory academic work at the time they left the college. By contrast, two of every three male students dropping out had less than a C average. This distinction has disappeared. The data presented in this report indicate that over the last ten years we have experienced falling attrition for students whose academic performance was unsatisfactory and rising attrition for students whose performance was satisfactory. The current drop-out rates for both men and women earning less than a C average at Knox College are far below the corresponding rates for men and women earning a C average or better. The aggregate attrition rate during this period has been relatively stable due to the cancellation of changes in the various component rates. This report will examine current trends in these individual rates and will discuss some changes in the Knox universe which can be associated with changing trends in attrition. The following outline summarizes the data:

I. Total Attrition (Chart I)

A. One Year: Relatively stable; averages 17%; latest figure: 15.8%

B. Two Years Cumulative: varied between 25.5% and 36.8%; latest: 30.1%

II. Attrition of Women (Chart II)

A. One Year Unsatisfactory: downward trend since 1960; latest: 1%

B. Two Years Cumulative Unsatisfactory: downward trend since 1960; no net attrition after one year since 1964; latest: 1%

C. One Year Satisfactory: rising trend since 1958; high of 18.1% reached in 1965; latest: 14%

D. Two Years Cumulative Satisfactory: rising trend since 1960; high of 35.9% reached in 1964; latest: 35.2%

III. Attrition of Men (Chart III)

A. One Year Unsatisfactory: falling trend since 1958; low of 3.1% reached in 1965; latest: 5½%

B. Two Years Cumulative Unsatisfactory: falling trend since 1958; little net attrition after one year since low reached in 1965; latest: 6.1%

C. One Year Satisfactory: rising trend since 1959; high of 22.3% reached in 1965; latest: 18.2%

D. Two Years Cumulative Satisfactory: rising trend since 1959; high of 22.3% reached in 1965; latest: 18.2%

The Falling Attrition of Students Not Achieving a C Average

The decline in the attrition of students doing unsatisfactory academic work which occurred 1958-1962 can be associated with an improving freshman profile. The newly introduced Illinois State Scholarship Program had a very favorable effect on our competition for good students during these years. The profile of freshmen classes 1963-1967 has been relatively stable, however, and we cannot account for a falling attrition rate for below average students during these years on the ground that we were getting better students; not as

we have conventionally defined this term.[1] Nor need these data suggest that the rigor of our freshmen program has declined. The decline in these attrition rates is due to three basic institutional changes: (1) the discrimination in the academic advising of "high risk" students (fall, 1964), (2) a superior discrimination in the evaluation of marginal applicants (1965),[2] and (3) the replacement of a cumulative quality point graduation requirement with an "upperclass" C average graduation requirement.

The first of these institutional changes involved the recognition that a freshman class is a heterogeneous group of students which can be stratified by aptitude and high school background. Especially attacked was the banality of such academic advising as directed the student toward the immediate fulfillment of General Education Requirements at all costs. Advisers were informed that certain of their advisees, first impressions to the contrary, could not be expected to compete in specific academic situations as freshmen.

---

1 It is a credit to our admissions officers that in recent years we were able to maintain a good freshman profile while getting larger numbers of students at higher average (after scholarship) prices to the students. We were favored in this regard by the Illinois State Scholarship Program, the NDEA Loan Program, a higher rate of growth of disposable income, a growing college age population, and a rising college-going rate. For a discussion of these factors see The Enrollment Demand Facing Knox College, Office of Institutional Research, Knox College, Spring, 1966.

2 For the background material leading to our experimentation in the selection and advising of "high risk" students see the report from this office, Some Specific Aspects of the Performance of the 1963-1964 Freshman Class at Knox College (Identification of the High Risk Student), August, 1964.

The second of these institutional changes established guidelines for the discrimination of marginal applicants and led to the divorcing of the date of admission from admissions decisions reached after February 1. Especially attacked was the optimism in admissions which led to belated additions to scholarship funds and to standards of admission related to time of admission; to the "buying" of students in May below the caliber of students refused aid in February; to the acceptance of "fillers" in May and June of the caliber of students rejected in February. We moved away from the verbal discouragement we frequently gave marginal admittees[3] to a realistic estimation of the applicant's chance for graduation. At present an applicant is accepted or rejected on that basis, whether in February or May.[4]

The third institutional change which contributed to the decline in attrition rates for students not achieving a C average was our move from a cumulative quality point graduation requirement to an "upperclass" C

---

[3] "We will grant you admission, but in all fairness we must tell you we do so with great reluctance. You have very little chance of getting a degree from Knox." Some of these students should never have been accepted, but in any case they were getting good advise. Our advising program killed most of them off.

[4] No one ever doubted that by carefully selecting marginal students' courses many could be made to survive a year. The question was whether or not the first year would prepare them for upperclass work and normalize their chance for graduation. A favorable answer to these questions was reported in a two-year study by this office: AWR, Admissions With Reservations, August, 1966. It showed that not only did the substantial majority of these students survive the freshman year, but that most were performing satisfactorily after two years. It was correctly predicted that the percentage of this first experimental "high risk" group who would graduate would not differ significantly from the percentage graduating in their entire entering class.

average graduation requirement.[5] The new accounting system did not reduce the student's chances of being dropped for academic reasons after the freshman year. The change did benefit those students who made less than a C average in their first year, and who were not dropped. They were allowed to return and make a fresh start, having only to make up credit lost during the freshman year. In the past many students preferred to make a fresh start elsewhere rather than to return with D's and F's hanging over them. The new system of accounting also reduced the student's resentment of "poor academic advising" to which many of them attributed their troubles.

Later institutional changes may have reinforced the low attrition rates associated with the changes discussed above. The move to the three-three calendar (1966) placed the adviser in a position where he had fewer chances to make a mistake than was previously the case. This factor is of no small import considering the ineptness of some advisers. The dropping of the History Proficiency Requirement,(1966) sad as this was in lowering the college's discrimination of student educational backgrounds, did keep many freshmen from the frequently disasterous sequence of English 101, History 104, and a 100 level Modern Language.[6]

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[5] "Upperclass" relates to the student's performance after his first year in college. For data and supporting arguments that this change would strengthen graduation requirements see A Proposal to Establish an Upperclass C Average Graduation Requirement, Office of Institutional Research, Knox College, Spring, 1965. These arguments were subsequently supported by the fact that not a few students who were here when the requirement was changed had the option of the two systems and graduated only by opting for the old system.

[6] Beginning in 1964 we identified students whose advisers were counseled not to put them into this sequence. Advisers tended to place students in this sequence because they believed it was their responsibility to move their advisees toward fulfillment of General Education Requirements as rapidly as possible.

Other general factors affecting the Knox student universe may have influenced attrition rates for students with an unsatisfactory academic performance. Some men with a poor freshman showing might have decided to take a year off before making a fresh start elsewhere except for the draft situation. That this factor might not have been of considerable influence may be reflected in the fact that since 1965 the attrition rates for women doing poorly have improved slightly while the corresponding rates for men have deteriorated slightly.

It should also be noted that the improvement we have experienced in these attrition rates have been made in the face of a minor increase in student drug uses. The tragic "bomb-out" of a student involved in drug usage is more than occasional if the reports reaching the Dean of Students Office are true.

In the discussion above we have emphasized that the factors associated with falling drop-out rates for students earning less than a C average had their initial impact in the freshman year. The fact that we have had little or no net attrition for students in this category after the freshman year is of considerable moment, also.[7] If these factors only permitted us to get another year's tuition from these students, our new programs would be criminal. Fortunately, the evidence is all to the contrary; it is not only freshmen who are "saved", but upperclassmen as well.

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[7] The data presented do not show the percentage of students attending three years who do not appear for the fourth year. The total attrition of these students is quite stable at approximately five per cent. Most of these students leave the college for reasons not associated with academic problems. Most of the few students who are dropped by the college at this level ultimately return to graduate.

The Attrition of Students Making Satisfactory Progress

As was pointed out at the beginning of this study our attrition rates for students with a satisfactory academic record have been on the rise for the past several years. In the late fifties and early sixties these rates were relatively stable at the rates indicated in Table I. In recent years

Table I

First Year and Cumulative Second Year Attrition Rates Classified by Sex, Students Making Satisfactory Progress, Late Fifties and Early Sixties

Sex	1st Year Rate	2nd Year Rate (cum)
Men	6%	8%
Women	10%	25%

Source: Charts II and III of this report

the corresponding attrition rates for men have roughly doubled while the rates for women have increased up to forty and fifty per cent.

Possible reasons for this increase in attrition are: (1) the increasing financial burden of a college education to parents, (2) the increasing dissatisfaction with the educational environment, (3) the increase in student mobility associated with student unrest, (4) the falling attrition of students with unsatisfactory records. These factors will be discussed in turn.

The consensus of Illinois admission officers, expressed at the October, 1969, Meeting of the Illinois Association of Collegiate Admissions Officers and Registrars, is that financial burdens are the most important consideration in the transfer of students from private colleges to public colleges and universities. The Director of the Knox College Office of Financial Aid disputes

this opinion, claiming that it is the excuse for transfer given to public college admission officers and that rarely does a student transfer for financial reasons.[8] On the other hand, a recent state attrition study revealed that, of those people reporting, twenty-five per cent stated that financial difficulty was one of their important reasons for dropping out.[9] A comparison of this percentage for classes entering 1960 and 1965 did not suggest an upward trend in drop-outs for financial reasons.

It must follow, however, that if financial pressures are an important reason for drop-outs in the state generally, they are a much more frequent reason for the drop-out of junior college students in disadvantaged areas and for private college students faced with rapidly rising tuition charges. If attrition due to financial problems is not increasing in the state as a whole it is by no means assured that Knox College does not face an increasing

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8 The extent to which the reasons students give for leaving a college can be taken at face value has long been a matter of dispute. In the past many students did not want their transfer to imply their family was a "dollar short." On the other hand many students may have disguised their feelings of social or academic insecurity in claiming financial problems as their reason for transferring. I do not believe such immature rationalizing of transfer is as important today as in the past. To have trouble in continuing to meet the cost of a private college education today is commonplace in the best of families. On the other side of the picture the type of social insecurity associated with getting into the "right" fraternity or sorority has largely disappeared. For the reasons discussed above, academic insecurity at Knox College has been reduced in recent years. Many students have simply risen above such rationalizations. The Admissions Director of Northern Illinois University recently told me that most of the many transfer students they get from Knox College give financial considerations as their reason for transferring. He and I believe them.

9 Master Plan Phase III, Committee B, Admission and Retention of Students, June, 1969, Report to the Illinois Board of Higher Education, pp 7-8. The committee made comparisons on classes entering in 1960 and 1965. The questionnaire concerning reasons for attrition was lengthy to a fault, and only 1272 of the 1960 sample of 8065 (15.8%) returned forms which were processed. The corresponding figures for the 1965 sample were 2373 of 8894 (26.7%). About fifty-six per cent of the respondents were women. While the representativeness of the statistics obtained in this study must be questioned, the data are the best we have on Illinois Attrition.

problem in this regard.[10]

There are those who will argue that the principal effect of rising tuition at private colleges is to reduce the population of students to whom we are attractive; that the effect is principally felt in applications rather than in attrition. I argue that the effect of increasing tuition on applications is less and the effect on attrition greater than common sense indicates. I believe there exists an elasticity of parental willingness to sacrifice which is short lived.

The instability of parental willingness to sacrifice for the education of their children is an important cause of attrition in higher education. It is particularly important in the case of parents who dream of their children getting a better education than they. There are more parents willing to dream than there are parents willing to continue to pay for those dreams. A principal reason why attrition at Knox College is lower for students making satisfactory progress than is the case for state institutions is that the Knox parent is financially better off and better educated than his counterpart at the state institution. Education of children has been not so much of a "dream" for the Knox parent as it has been a reality to be faced. Indeed, frequently it has been the concern of the Knox parent that the son or daughter might not accept this reality.

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[10] The Knox attrition rates are far below the rates quoted for the state as a whole by Committee B. It estimates that 30.3 per cent of the students entering four year institutions graduate in four years and that 44.7 per cent within seven years. It estimates that another 20 per cent graduate in institutions to which they have transferred. Ibid. p 1. Thus, while state data may be helpful in some explanations concerning our attrition it should be recognized that we are dealing with a select body of students.

Ten years ago the instability of parental willingness to sacrifice for the education of their children was of little import at Knox College. In the last several years increasing costs for tuition, room, and board have increased the percentage of students on financial aid. More Knox parents are feeling a financial strain from the education of their children. Of equal importance, the Illinois State Scholarship program has helped to increase the percentage of Illinois students going to college whose parents did not go to college. A very substantial part of our freshman classes are Illinois State Scholars, many of them from parents who did not include Knox College within their horizons until the State Scholarship materialized. Financial strain and revised dreams are no longer alien to Knox parents.

Thus, some part of our increase in attrition for students making satisfactory progress is associated with increasing tuition. While the first year rates have improved slightly in the last few years, possibly due to our move from a three to a four year scholarship program, attrition from the instability of parental willingness to sacrifice will grow as surely as our tuition grows. Since we may have no choice but to raise tuition in the future we may have no alternative but to count on increasing attrition.

Note that whatever increase in our drop-out rates that have been associated with rising tuition has been offset by falling attrition rates for students with unsatisfactory records. This cannot be true in the future because we are near the finite limit of improvement in these latter rates.

Note, also, that the development of "new" and "exciting" freshman programs will have no effect on a parent's willingness to sacrifice which is

based on dreams. With dreams we can neither brighten the original nor patch up the shattered. If there is any answer to the problem it lies in facing these parents with realities before their children matriculate here. Short of success in this we should give more weight to attrition as a variable in our future long run prognostications.

A second reason for the increase in our attrition for students making satisfactory progress reflects the increasing dissatisfactions students feel toward particular educational environments. These dissatisfactions may stem from a failure to get into a desired program of studies, objections to teachers and teaching methods, or objections to the educational tone of an institution. Master Plan Committee B's study on retention and attrition indicates that such dissatisfactions are on the rise and constitute very important reasons for attrition today.[11] Individual reasons for dropping out are quite varied. Many students are more sophisticated and demanding today. Male students in particular may be more professionally oriented, and we may lose an increasing number who feel they will be better off in science programs in state universities or in business administration programs available elsewhere. The lessening of student feelings of academic insecurity referred to above may mean we are dealing with an increasingly mobile population.

The relative importance of such variables is speculative. It has been suggested that the state study on attrition has created the <u>illusion</u> of rising attrition rates from such factors. This view argues that when one

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[11] <u>Ibid</u>, p 8.

asks recent drop-outs why they did not continue at an institution they tend to blame the institution; when one asks the college drop-out of ten years past the same questions he tends to blame himself. Thus, the illusion of increasing dissatisfactions is created by a difference in the maturity of the respondents.[12]

To the extent that male students are more professionally oriented today than before, we can combat it short of changing the character of Knox College. We should take the view that the truly incorrigible professionally oriented student has gone to the state university in the first place. Our own students can be convinced that their professional career can be enhanced at Knox College at the same time they are getting a superior general education. The addition of the computer center and the development of computer oriented courses may have helped. The new science building may help. A strengthening of the General Education Program, perhaps within the framework of allowing students to declare a major after one year, might help.

Some considerable part of the student dissatisfaction with institutions is related to the dissatisfaction with society in general. Some of these students complain of associating success with the acquisition of luxury automobiles and "ticky tacky" split level houses. Many resent an educational

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[12] This view was expressed at the October Meeting of IACRAO in Chicago. It is an insight argument of the type conventionally used to lie out of the facts presented rather than a professional criticism. As indicated above I have considerable faith in the responses of today's youth (though I have admitted that the sample of responses to the state questionnaire may be too small to be representative). My experience is that there are far more people who will lie out of statistics than there are people who will lie with them.

institution's place in preparing graduates for superior positions in the establishment. Many of these students have no clearly defined goals of their own and are in no hurry to achieve success along conventional lines.

While such attitudes may be related to the general increase in student mobility the initial impacts seem to be the increase in student demands on faculties and administrations. Demands include elimination of social restraints imposed by administrations, liberalization of curricula, less restrictive admissions policies, and increased student participation in the general decisions facing colleges.

Colleges taking a completely intransigent position against such student demands will lose some good students, but colleges may lose some good students no matter what they do. At Knox College we should continue to meet such student demands as are in the bounds of academic propriety. There is no cause for panic nor any excuse for it.

There is no evidence that such student dissatisfactions have materially affected the size of our student body. Unlike the problems caused by increasing tuition rising attrition associated with increasing mobility of students need not mean a net loss in students. As many students may transfer in as transfer out. It is true that in past years our competition for transfer students has been nothing to brag about, but between the appropriate evolution of our program and an increased competition for transfer students we might post a net gain from the general increase in student mobility.

A third influence on higher attrition rates of students making satisfactory progress is the increase in student "restlessness" which has been

observed in recent years.[13] Some part of this restlessness is due to a lack of orientation toward anything. Some students simply "don't know where they're at" and probably never have. Included in this group are many male students who would have delayed or not continued their education except for the war in Viet Nam and the draft. There is no evidence that draft avoidance causes us a net loss in students.

Some educators speculate that student restlessness involves a "search for identity" on the part of many students from large urban communities. This view stresses that a loss in community and family ties occurs as industrialization proceeds and students become generations removed from rural values. There is seen to be a considerable overlap with the group of students so affected and the group of students critical of the establishment in general.

It is true that the percentage of new students coming to Knox College from smaller communities has been falling significantly for the past fifteen years. Of the new students from Illinois who came to Knox College in 1955, forty per cent were from communities of less than 10,000. The comparable figure for 1960 was thirty-three per cent, and the comparable figure for 1969 was twenty-six per cent.[14] It is true that our student population has changed in its patterns of origins, but this seems to have little effect on the total attrition

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[13] The Committee B Report referred to above cites this factor as being of increasing importance. Op. Cit., p 8.

[14] Office of the Registrar, Knox College: Geographical Analysis of Registration, 1955-56, 1960-61, and 1969-70. There has been no significant increase in our percentage of out-of-state students over this period.

rates. In none of the years referred to did we have any appreciable difference between the percentage of the entire student body coming from small towns and the percentage of new students coming from small towns.[15]

It is not improbable that if one could examine the academic records of all Illinois college students afflicted with restlessness one would find the large majority of these records inferior. If Knox College has enrolled larger percentages of restless students over the years we might have expected higher attrition from students earning less than a C average. It could be argued that this potential increase in attrition was offset by the institutional changes at the college discussed above, but such a proposition is supposititious. It is enough to say that we have not been seriously affected by this variable.

So far as the restless student with high potential is concerned there need be no net loss of these students unless they drop out of higher education altogether. We may get more than we lose if we compete for the transfer student. In fact, we may get some of the restless students that we don't want, but that is a matter of inadequate discrimination.

The fourth cause of our increase in attrition rates for students doing satisfactory work academically is the fall in our attrition rates for students earning less than a C average. In the first place our Admission With Reservations program has meant that in recent years we have accepted increasing number of students who could not get into a college of comparable academic standing. Knox

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[15] The fact that the percentage of women in the total student body is significantly less than the percentage of women in the freshman class indicates that it is meaningful to stratify attrition data by sex. Conversely, it does not appear meaningful to stratify the data by size of the community from which the student comes.

is not the first choice of some of these AWR students. Some of them leave after establishing a satisfactory first year record here, transferring to the college of their first choice. Prior to the AWR program almost none of our "high risk" students withdrew in good standing, but of the original AWR experimental group ten per cent withdrew in good standing after two years.

For whatever reason some students seem "due" to drop out of college. Their records may be satisfactory, or they may be unsatisfactory. To the extent that a college is successful in its attempts to reduce the percentage of the latter it will increase the percentage of the former.

It should be recognized, however, that such increases in the attrition rate of students making satisfactory progress as can be associated with decreases in the attrition rates of students making unsatisfactory progress do not represent increases in the slope of a trend line which can be meaningfully extrapolated. If the possibility of improving the unsatisfactory rate is finite; so is the adverse effect on the satisfactory rate finite. If we can account for some of our increase in the attrition rate of satisfactory students by falls in the corresponding rates for unsatisfactory students, we shall not be able to do so in the future. The later rates can scarcely be improved.

Summary:

Over the last ten years there has been a significant improvement in the Knox College attrition rates for students earning less than a C average. The substantial improvement which has occurred in the past several years can be associated with specific institutional changes involving admissions decisions,

academic advising, and graduation requirements. By contrast, the Knox College attrition rates for students making satisfactory progress have risen substantially over the last ten years. The increase in these rates is associated with rising tuition, increasing student dissatisfactions, increasing student restlessness, and the fall in attrition rates for students whose progress was less than satisfactory. While student dissatisfaction and student restlessness may have cost us some students, as many may have transferred in. The rising attrition rate of students making satisfactory progress associated with the fall in attrition rates for students earning less than a C average cannot be extrapolated.

The increase in attritions rates associated with rising tuitions cannot be sloughed off so easily. In the past we have been fortunate enough to offset these increasing rates with falling rates for students earning less than a C average. This cannot be true in the future. A multitude of factors involving increasing costs are considered in reaching a decision to increase tuition. In the future we must add to these factors an additional consideration, the rise in attrition rates which we may expect from the increase in tuition.

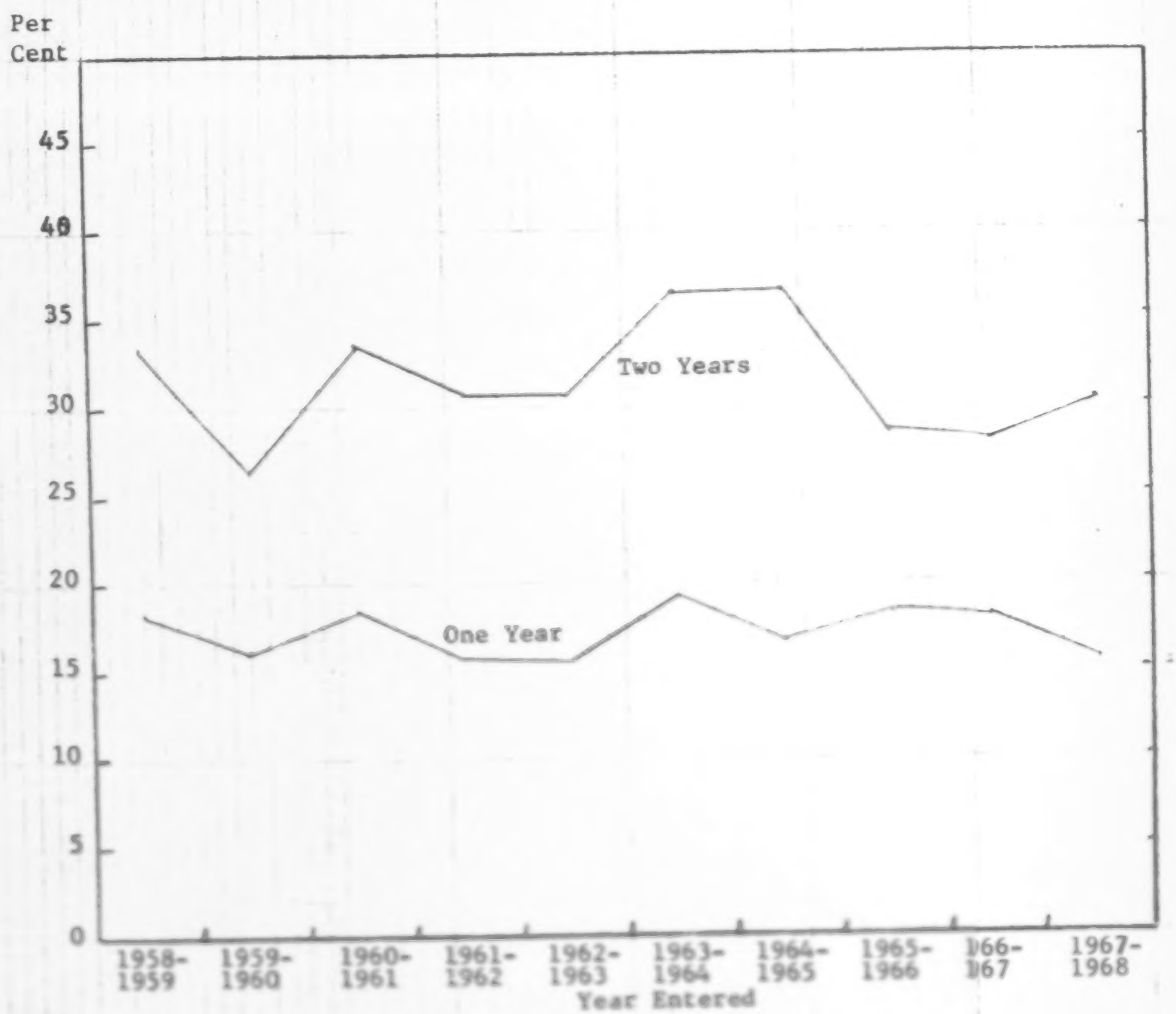
It has been suggested that an obvious reason why we have had declines in the attrition rates for students making unsatisfactory progress and increases in the attrition rates for students making satisfactory progress is that we have done something to affect the former and have done very little to affect the latter.[16] There is a kernel of truth here. I only urge that

[16] I believe this to be the sense of some remarks made by Dr. Morris Keaton, (Antioch), Chairman of the Northwest Central Association's investigating team which visited Knox College last year.

steps to combat attrition of students making satisfactory progress be taken with prudence and control. In the end the wisest changes we make in our institution may have relatively little effect on the attrition rate of satisfactory students. Certainly we should not change the educational character of Knox College on the basis of the endless excitements bobbing up on the national scene. Indeed, the argument that only revolutionary changes can preserve the quality of student bodies at private colleges well may kill off some of our more naive competitors.

CHART I

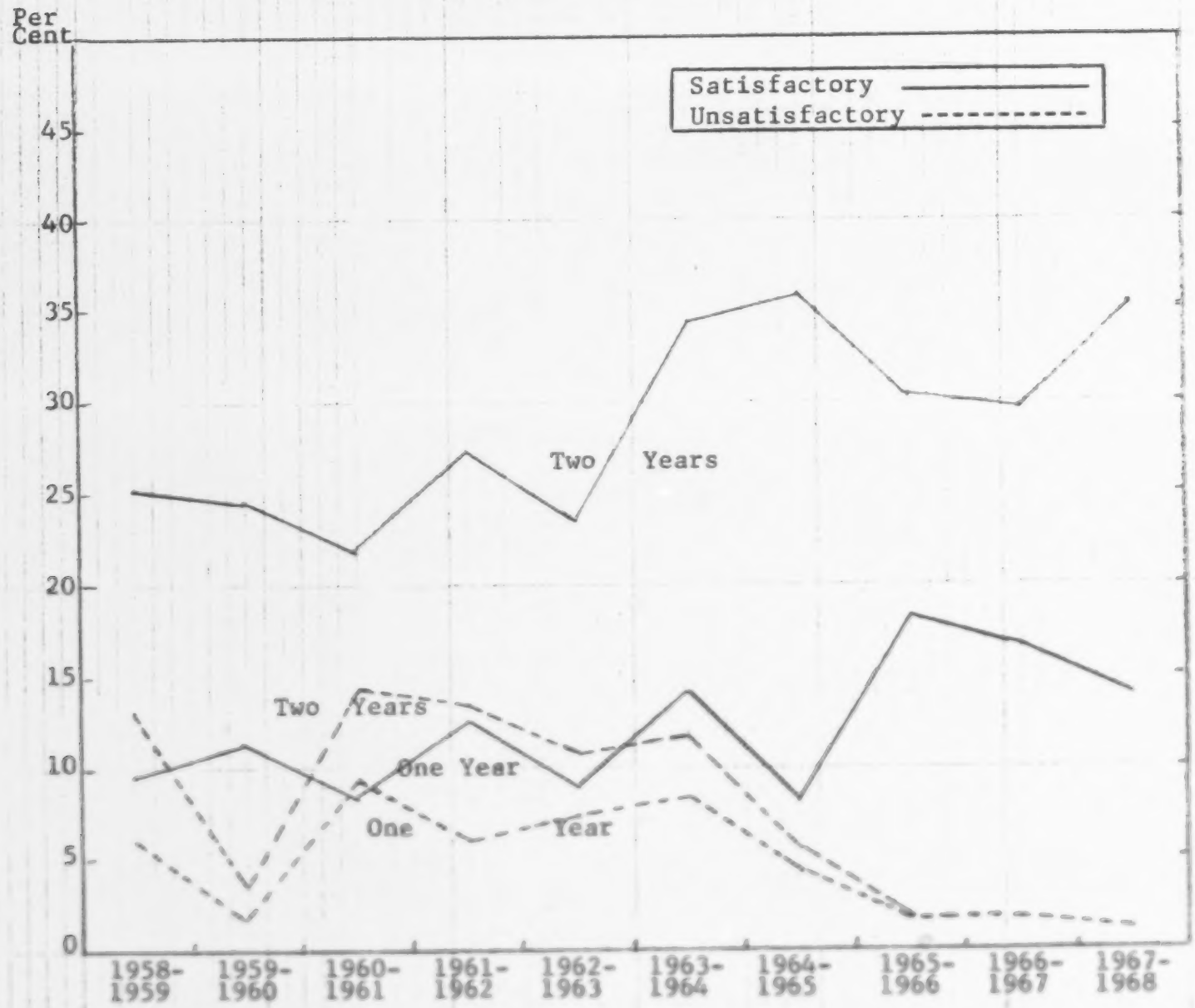
CUMULATIVE PERCENTAGE OF DROP-OUTS FROM ALL CAUSES, CLASSIFIED BY YEARS COMPLETED WHEN DROP-OUT OCCURRED, ALL STUDENTS ENTERING WITH FRESHMAN STATUS, 1958-1968



Source: Office of Institutional Research, Knox College
December, 1969

CHART II

CUMULATIVE PERCENTAGE OF DROP-OUTS CLASSIFIED
BY SATISFACTORY OR UNSATISFACTORY PROGRESS*
WHEN DROP-OUT OCCURRED, WOMEN ENTERING
WITH FRESHMAN STATUS, 1958-1968

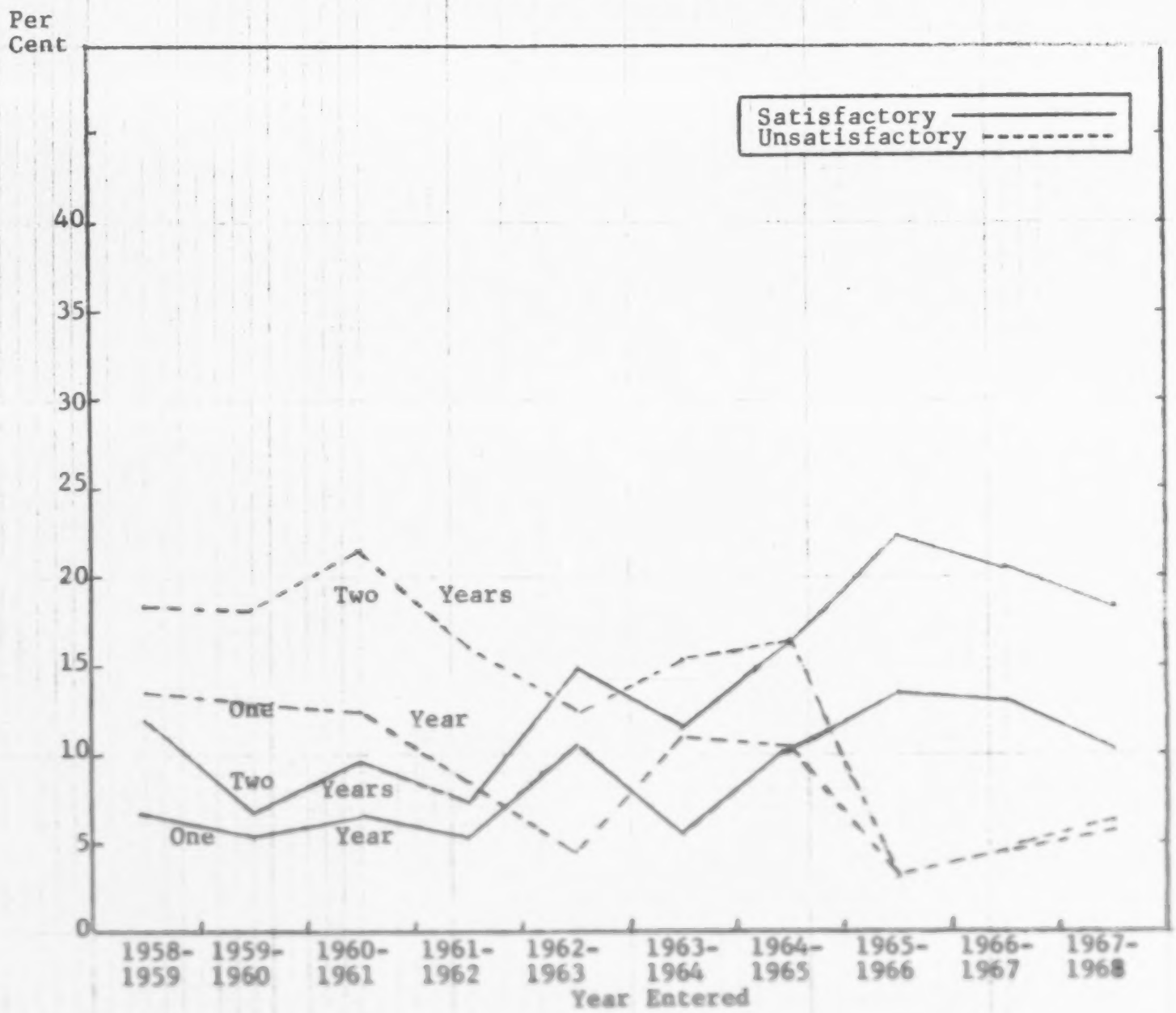


Source: Office of Institutional Research, Knox College

*Satisfactory: 2:00 Grade Index or Above.

CHART III

CUMULATIVE PERCENTAGE OF DROP-OUTS CLASSIFIED BY SATISFACTORY OR UNSATISFACTORY PROGRESS* WHEN DROP-OUT OCCURRED, MEN ENTERING WITH FRESHMAN STATUS, 1958-1968

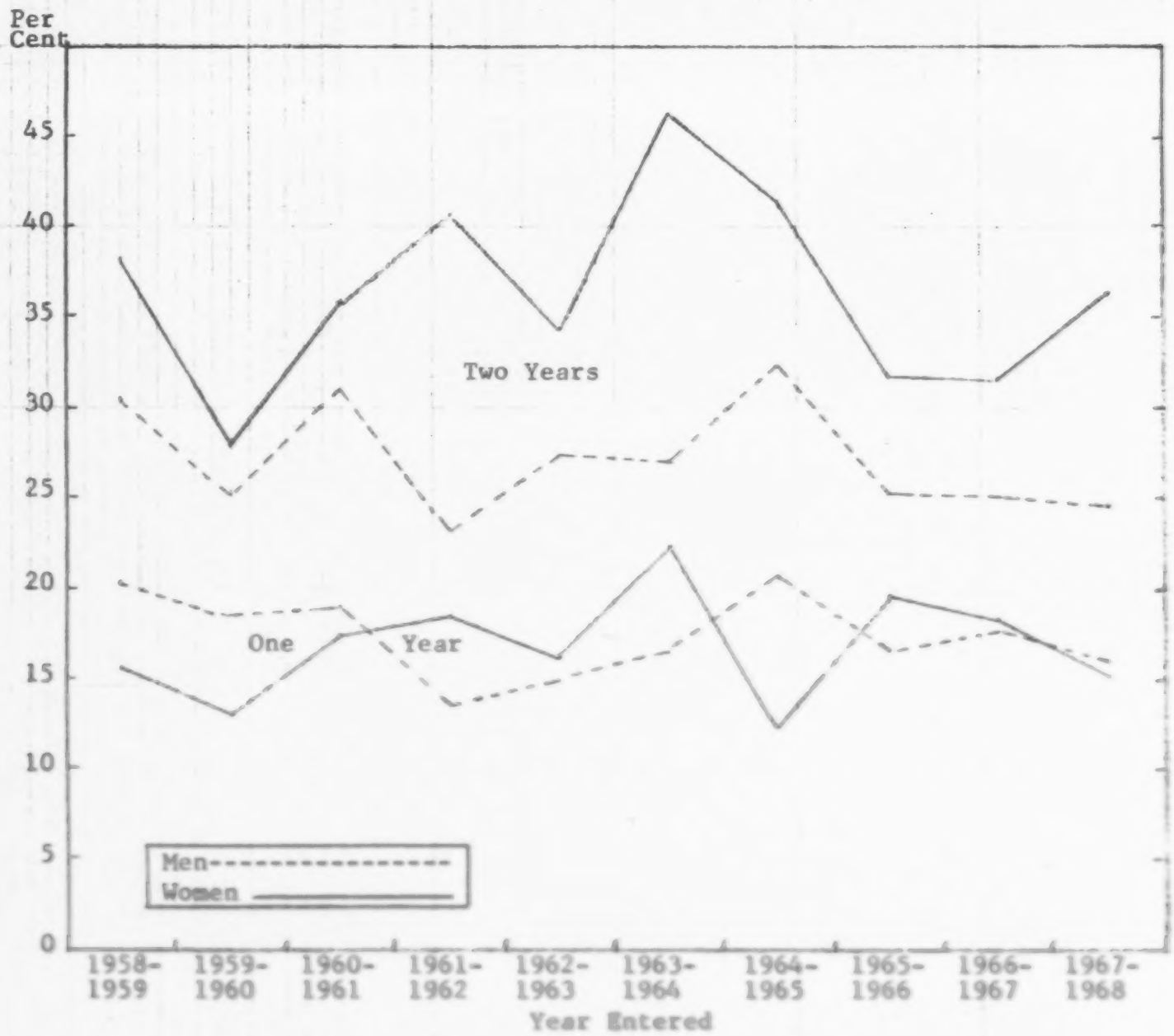


Source: Office of Institutional Research, Knox College
December, 1969

*Satisfactory: 2:00 Grade Index or Above.

CHART IV

FIRST YEAR AND SECOND YEAR CUMULATIVE PERCENTAGE OF DROP-OUTS CLASSIFIED BY SEX, 1958-68



Source: Office of Institutional Research, Knox College
December, 1969

APPENDIX

The data on students entering in the fall of 1968 who did not return in the fall of 1969 are not included in the preceding report. Attrition rates for the students based on information posted in the fall of 1969 will be biased upward since some of the students will return at a later time. The relevant data on these students is stated below.

FIRST YEAR ATTRITION OF FRESHMEN ENTERING FALL, 1968, CLASSIFIED BY SEX AND ACADEMIC PROGRESS

Sex	Per Cent of Drop-outs		
	Below C Average	C Average or Above	Total
Female	.5	16.3	16.8
Male	2.6	11.4	14.0
All	1.6	13.6	15.2

Source: Office of Institutional Research
December, 1969

The drop-out rates for both men and women with less than a C average represent new lows. The drop-out rate for men making satisfactory progress is not significantly different from the rates of the past few years. The drop-out rate for women making satisfactory progress is the third highest rate we've had in the last eleven years, but some of these women may return. Thus, the data for this entering group is consistent with the trends predominating in the past several years.

PHYSICAL RESTRICTIONS ON FREEDOM OF CHOICE

The accompanying data on our close-out problem this spring are presented to emphasize the effect changes in college requirements can have on the relationship between demand and supply for individual courses. The elimination of the English requirement this year in favor of the addition of the Freshman Seminar in the fall permitted freshmen greater freedom in their selection of courses this spring. Unfortunately, the college's ability to honor student course demands is circumscribed by faculty supply in individual departments and by restrictions placed on enrollments in specific courses. The great increase in freshmen close-outs this spring clearly indicates that a student's freedom to enroll in courses does not increase pari passu his freedom to elect courses.

In matters of this kind one needs to identify those physical boundaries which effectively constrain the freedom of choice; to ask if these boundaries are essential and in the nature of things. In the present instance the constraint is imposed by the limitations on faculty mobility. The excess supply of talent in the history department in a given term cannot satisfy the first line excess demand for courses in sociology and philosophy. True, if such a situation persists normal faculty turnover may permit a reduction of faculty in one department in favor of an increase in faculty in another. Short of this, the department with an excess of supply of faculty frequently will find itself a haven for students closed out of other departments.

The Seventeenth Law of Melville is that a person who is forced to play and not permitted the game of his choice will play safe. The student who is not permitted to take a course of his choice will choose as an alternative a

course with which he is familiar. It will be the students who are familiar with a foreign language who will choose a language as an alternative course; the student who has had world history in high school who will choose western civilization when closed out of another course; the student who has a background in scientific subjects who will choose a science course as an alternative.

If faculty immobility can be eliminated, if it is not in the essence of things, the demand-supply disequilibrium occasioned by freedom of course election is a simple problem of resource misallocation in the process of correction; a case of educational constipation soon to be relieved. On the other hand, if substantial faculty immobility is a fact with which we must live, if no simple suppositorial remedies exist, we must recognize there are some things our system won't tolerate; namely, complete freedom of course election.

For those of us who believe that superior achievement in most areas of higher education is associated with competency in languages--English and foreign--, mathematics, and history; who believe that student experience in a variety of fields is requisite to intellectual discipline, and who recognize the necessity for substantial departmental inflexibilities, it take little vision to see that some very good students will be penalized by the elimination of proficiency and distribution requirements. The student with a high school background in world history who has fallen back on history because he has been closed out of sociology or philosophy might well wonder if he might not better profit from the closed courses than those students enrolled in them with no history background at all. The point is that if the physical conditions of freedom are not present, freedom will be restricted for some students. If so, better to make the restrictions overtly consistent with one's educational values.

George Melville
April, 1970

APPENDIX XXX

THE PROBLEM OF CLOSE-OUTS FOR THE SPRING TERMS, 1969-1970

Office of Institutional Research
March, 1970

TABLE I

NUMBER OF CLOSE-OUTS AFTER SECTION SWITCHING CLASSIFIED BY CLASS STANDING AND NUMBER OF REQUESTED COURSES CLOSED OUT, ENROLLMENT* FOR SPRING TERMS, 1969 AND 1970

Number of Courses Closed Out	Freshmen		Sophomores		Others		Total	
	1969	1970	1969	1970	1969	1970	1969	1970
1	108	162	84	70	69	44	261	276
2	10	59	12	18	10	4	32	81
3	0	6	0	3	0	0	0	9
Totals	118	227	96	91	79	48	293#	366#

Source: Office of Institutional Research, March, 1970

*Enrollment 1969: 1282
Enrollment 1970: 1338

#Ratio of Freshmen to Total

1969	1970
40.3	62.0

SUMMARY STATEMENTS

1. Close-outs were a greater problem in 1970 than in 1969.

   Total courses closed per student enrolling 1969: .229
   Total courses closed per student enrolling 1970: .274

   Close-outs were a greater problem not only in magnitude but were a greater problem relative to the size of the student body.

2. Freshmen suffered a much greater share of the burden of close-outs in 1970 than in 1969.

   A. Upperclassmen are better at beating the game.

   B. Change in graduation requirements has altered freshman demand.

      1) Enrollment in Eng 101 fell from 80 to 50 (actually enrolled).

      2) Possibly because the Freshman Seminar delayed some people from beginning history as freshman, Hist 106 enrollment fell from 178 to 129 (actually enrolled).

      3) Except for these two situations our total close-out problem was improved (with a larger student body).

3. Recommendations

   A. Look carefully at history enrollments for the fall term.

      1) If per capita enrollment in History 104 increases due to a shift from the freshman to sophomore year, more spaces in other courses will be open to freshmen in the spring of 1971. The problem will have solved itself.

      2) If per capita enrollment in History 104 does not increase substantially consider these suggestions (together or as alternatives).

         a) Convert Western Civilization into a two-course sequence beginning in the winter. Make provision for large sections. Require these two history courses of students who have had no history except one year of American History in High School.

         b) Replace the first two history instructors who leave the college with a sociologist and a psychologist.

   B. Call into question the right of the English Department to restrict the enrollment of every class.

   C. Recognize that the Freshman Seminar affects other enrollments.

APPENDIX XXXI

CHANGES IN ENROLLMENT IN MATHEMATICS, NATURAL SCIENCES, PSYCHOLOGY, AND FOREIGN LANGUAGES ASSOCIATED WITH CHANGES IN COLLEGE GRADUATION REQUIREMENTS, 1960-1968

George L. Melville
Director of Institutional Research
April, 1970

To: Knox Faculty

April 30, 1970

From: George Melville

The accompanying tables on course enrollment were presented to the Economy Committee for consideration in the review of the Instruction Committee's proposal to change proficiency and distribution requirements. The data pertain particularly to the years involving changes in proficiency, competency and distribution requirements.

Summary Statements:

1. (Table I) The sophomore competency requirement and the three-three calendar effected an increased efficiency in the teaching of calculus.

2. (Table II) Acceptance of three years of high school mathematics as a proficiency alternative to achievement test scores lowered the demand for math 101-102 and eliminated the economy previously achieved. When the requirement went into effect about 11% of the students did not have three years of high school mathematics. The current figure is 9%.

3. (Table III) The sophomore competency requirement increased the efficiency of teaching intermediate languages as of 1967-68.

4. (Table IV) The three-three calendar increased the demand for 100 level languages and increased the efficiency of teaching these courses. Acceptance of three years of a foreign language in high school as meeting this proficiency had little effect on demand for these courses. Many students who have had three years of a foreign language in high school take one to three courses at the 100 level in preparation for passing the sophomore competency through languages. (Such students taking three courses would be entering a language that is new to them.)

5. (Table VI) Between 1960-61 and 1967-68 enrollment in mathematics and sciences, exclusive of psychology and mathematics 101-102, increased 33.6%. Credit enrollment increased 21.6%. (Table VII) (The difference in the percentage is due to the large number of four and five hour courses taught in math and science in the semester system.)

6. The student body increased by 29.2% during the period 1960-61 to 1967-68.

7. (Table VIII) Exclusive of psychology 111 which did not count as science credit, enrollment in psychology from the year preceding its listing as a science (1962-63) to 1967-68 increased 93.5%. Credit enrollment increased 116.2%.

Recommendations: Maintain the proficiency, competency requirements as they stand with the following exceptions:

1) Remove the requirement of math 101-102 for students not having three years of math in high school in favor of a requirement of one course in college level math, designed to facilitate learning effectiveness in physical and social science courses, to be required of students not achieving a score of 525 on the CEEB math achievement test.

2) Provide that a student may count no more than one course in psychology as satisfaction of the distribution requirement in science.

TABLE I

TOTAL ENROLLMENT IN MATHEMATICS 151 AND 152, CLASSIFIED BY COURSE, 1964-65 TO 1967-68

	1964-1965		1965-1966		1966-1967**		1967-1968	
	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections
Mathematics 151	122 (183)*	5	149 (224)	5	225	8	196	7
152	94 (141)	5	115 (172)	5	143	6	118	5
Totals	216 (324)	10	264 (396)	10	368	14	314	12

Source: Office of Institutional Research, April, 1970

**Year Sophomore competency adopted.

*All figures in parentheses express enrollment credit in terms of the current course units.

SUMMARY

Year	Faculty Required	Enrollment	Enrollment per Faculty
1964-65	2.27	216	95
1965-66	2.27	264	116
1966-67	2.00	368	184
1967-68	1.71	314	184

TABLE II

TOTAL ENROLLMENT IN ELEMENTARY MATHEMATICS CLASSIFIED BY COURSE, 1964-65 TO 1967-68

	1964-65		1965-66		1966-67**		1967-68	
	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections
Mathematics								
101	36 (32)*	1	28 (25)	1	21	1	21	1
102	36 (32)	1	28 (25)	1	17	1	20	1
Total	72 (65)	2	56 (50)	2	38	2	41	2
131	232 (209)	7	223 (201)	8	79	3	60	3

Source: Office of Institutional Research, April, 1970

**Rule adopted that three years of mathematics in high school satisfied math proficiency.

*All figures in parentheses express enrollment credit in terms of the current course units.

SUMMARY

Year	Faculty Required	Enrollment	Enrollment per Faculty
1964-65	1.22	304	249
1965-66	1.36	279	205
1966-67	.71	79	111
1967-68	.71	60	85

TABLE III

TOTAL ENROLLMENT IN INTERMEDIATE MODERN LANGUAGES, CLASSIFIED BY COURSE, 1964-65 TO 1967-68

	1964-65		1965-66		1966-67**		1967-68	
	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections
French								
201	96 (86)*	4	72 (65)	3	62	4	77	3
202	58 (52)	3	46 (41)	2	52	3	43	2
German								
201	44 (40)	4	44 (40)	3	36	2	52	3
202	25 (22)	2	26 (23)	2	30	2	14	1
Russian								
201	20 (18)	1	12 (11)	1	16	1	18	1
202	9 (8)	1	10 (9)	1	10	1	9	1
Spanish								
201	29 (26)	2	35 (32)	2	37	3	51	3
202	25 (22)	2	26 (23)	2	31	3	20	1
Totals	306 (275)	19	271 (244)	16	274	19	284	15

Source: Office of Institutional Research, April, 1970

**Year sophomore competency adopted.

*All figures in parentheses express enrollment credit in terms of the current course units.

SUMMARY

Year	Faculty Required	Enrollment	Enrollment per Faculty
1964-65	2.59	306	118
1965-66	2.18	271	124
1966-67	2.71	274	101
1967-68	2.14	284	133

TABLE IV

TOTAL ENROLLMENT IN ELEMENTARY MODERN LANGUAGES
CLASSIFIED BY COURSE, 1964-65 TO 1967-68

	1964-65		1965-66		1966-67**		1967-68	
	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections	Enrollment	Sections
French								
101	57 (68)*	3	69 (83)	3	46	2	68	3
102	79 (95)	4	87 (104)	4	60	3	92	4
103	--	-	--	-	67	4	97	4
German								
101	80 (96)	4	61 (73)	3	61	3	53	3
102	92 (110)	5	71 (85)	3	68	3	63	3
103	--	-	--	-	65	4	67	3
Russian								
101	27 (32)	2	27 (32)	2	25	2	27	2
102	34 (41)	2	26 (31)	2	24	1	24	1
103	--	-	--	-	23	1	23	1
Spanish								
101	35 (43)	2	43 (52)	2	43	2	63	3
102	46 (55)	2	57 (68)	2	48	2	71	4
103	--	-	--	-	51	3	67	4
Totals	450 (540)	24	441 (529)	21	581	30	715	35

Source: Office of Institutional Research, April, 1970

**Year rule adopted that three years of a foreign language in high school satisfied the language requirement.

*All figures in parentheses express enrollment credit in terms of the current course units.

SUMMARY

Year	Faculty Required	Enrollment	Enrollment per Faculty
1964-65	4.36	450	103
1965-66	3.82	441	115
1966-67	4.29	581	135
1967-68	5.00	715	143

TABLE V

FRESHMAN ENROLLMENT, 1964-65 to 1967-68

Year	Enrollment
1964-65	444
1965-66	378
1966-67	383
1967-68	382

Source: Office of Institutional Research
April, 1970

TABLE VI

ENROLLMENTS IN MATHEMATICS AND SELECTED SCIENCES, CLASSIFIED BY LEVEL, 1960-61 TO 1967-68

Department and Level	1960-1961	1961-1962	1962-1963	1963-1964	1964-1965	1965-1966	1966-1967	1967-1968
Biology								
100	266	326	226	285	319	319	228	206
200	60	85	72	63	77	77	120	98
300	153	186	129	101	111	97	335	281
320				72				28
400		2	2	3	4		10	8
450			14	13	20	9	19	23
Total	479	599	443	537	531	502	712	644
Chemistry								
100	205	185	168	159	147	184	181	192
200	134	90	53	84	83	88	106	90
300	121	173	152	120	136	135	140	89
400	11	12	2	5	7	2	2	2
450			14	12	13	21	17	10
300 (Gen Ed)					4	17		33
Total	471	460	389	380	390	447	446	416
Geology								
100			53	69	109	60	103	111
200			7	5	3	7	8	
300			4	11	18	14	22	35
450				1	2		2	2
Total			64	86	132	81	135	148
Mathematics								
101-102	129	78	106	65	72	56	38	41
131	148	123	140	140	232	223	79	60
151-152	220	240	224	233	216	264	368	314
300	233	288	298	235	227	200	345	401
400	10	6	14	9	9	2	5	13
450			28	12	23	16	9	22
123 (finite)	8	12		21	21	27	8	5
Total	748	747	810	715	800	788	852	856
Computer Sci.								
100								38
300								2
Total								40
Physics								
100	167	170	162	186	194	182	147	224
200	80	59	39	20	22	27	46	66
300	81	59	80	104	122	117	42	46
400	1	2	3		2			3
450			10	7	8	2	9	6
251-253							57	128
Total	329	290	294	317	348	328	301	473

Source: Office of Institutional Research, April, 1970

TABLE VII

ENROLLMENTS IN MATHEMATICS AND SELECTED SCIENCES, CLASSIFIED BY LEVEL, 1960-61 TO 1967-68
(In Current Units)

Department and Level	1960-1961	1961-1962	1962-1963	1963-1964	1964-1965	1965-1966	1966-1967	1967-1968
Biology								
100	319	391	271	342	383	383	228	206
200	54	76	65	57	69	69	120	98
300	138	167	116	91	100	87	335	281
320				65				28
400		4	4	5	7		10	8
450			13	12	18	8	19	23
Totals	511	638	469	572	577	547	712	644
Chemistry								
100	246	222	235	238	220	276	181	192
200	121	81	48	76	75	79	106	90
300	109	156	137	108	122	121	140	89
400	20	22	4	9	13	4	2	2
450			13	11	12	19	17	10
300 (Gen Ed)					4	15		33
Totals	496	481	437	442	446	514	446	416
Geology								
100			64	83	131	72	103	111
200			6	4	3	6	8	
300			4	10	16	13	22	35
450				1	2		2	2
Totals			74	98	152	91	135	148
Mathematics								
101-102	116	70	95	58	65	50	38	41
131	133	111	126	126	209	201	79	60
151-152	330	360	336	349	324	396	368	314
300	210	259	268	211	204	180	345	401
400	18	11	25	16	16	4	5	13
450			25	11	21	14	9	22
123 (finite)	7	11		19	19	24	8	5
Totals	814	822	875	790	858	869	852	856
Computer Sci.								
100								38
300								2
Totals								40
Physics								
100	234	255	243	279	291	273	147	224
200	72	53	35	18	20	24	46	66
300	73	53	72	94	110	105	42	46
400	2	4	5		4			3
450			9	6	7	2	9	6
251-253							57	128
Totals	381	365	364	397	432	404	301	473

Source: Office of Institutional Research, April, 1970

TABLE VIII

ENROLLMENT IN PSYCHOLOGY, CLASSIFIED BY LEVEL, 1960-61 TO 1967-68

Department and Level	1960-1961	1961-1962	1962-1963	1963-1964*	1964-1965	1965-1966	1966-1967	1967-1968
Psych 111	150 (180)**	173 (208)	197 (236)	224 (269)	250 (300)	274 (329)	280	278
200	102 (92)	108 (97)	107 (96)	90 (81)	123 (111)	174 (157)	208	216
300	59 (53)	71 (64)	86 (77)	77 (69)	64 (58)	70 (63)	133	148
400	6 (11)	2 (4)		2 (4)			3	3
450			6 (5)	13 (12)	8 (7)	6 (5)	5	18
Totals	317 (336)	354 (373)	396 (414)	406 (435)	445 (476)	524 (554)	629	663

Source: Office of Institutional Research, April, 1970

*First year Psychology courses were recognized as fulfilling the Science and Mathematics requirement.

**All figures in parentheses express enrollment credit in terms of the current course units.

TABLE IX

PERCENTAGE OF STUDENTS WITH SPECIFIED ENTRANCE CREDENTIALS IN MATHEMATICS, LANGUAGE AND HISTORY, RECENT ENTERING CLASSES AT KNOX COLLEGE

Credentials in Area	Percentage of Students
Three or More Years Mathematics	91
Three or More Years of a Foreign Language	63
One Term or More of History besides American History	70
Three Years of Mathematics and Three Years of a Foreign Language	58

Source: Office of Institutional Research
Knox College, April, 1970

APPENDIX XXXII

MONMOUTH • ILLINOIS 61462
TELEPHONE: 309•734-3161

MONMOUTH COLLEGE
FOUNDED • 1853

Office of Institutional Research

8 September 1970

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

The following progress report on Institutional Research in accordance with the CORD Grant from 1 January through 31 August 1970 is submitted:

1. Due to an extension of time granted by the USOE, this report includes the summer activities with a summary of expenditures (Incl 1) from 1 January through 30 June 1970.

2. The grade distribution reports for first, second, and third terms of the 1969-70 academic year were completed and forwarded to the Dean of the College (see par. 5, progress report letter for 1968-69 dated 1 July 1969). From these reports, a one-page report, "Teaching Loads 1969-70", was prepared for the Dean indicating for each department the full course equivalent registrations, faculty full time equivalent, and the ratio FCE/FFTE (Incl 2).

3. The "X", "2", and "8" cards were updated and all information placed in the files of the Director of Data Processing for Monmouth College.

4. This office assisted in the compilation of data as requested for the Board of Higher Education, State of Illinois which included a space utilization study as well as various types of academic information.

5. A modified work sheet (Incl 3) was designed with the aid of the Monmouth College Controller to obtain basic information from each faculty member and administrator involved in the Unit Cost Study for Non-Public Institutions of Higher Education in the State of Illinois. This information was acquired, assembled, and submitted in report form for each term of the past academic year to the state office.

6. The undersigned assisted in the preparation of a proposal for a $10,000 USOE grant for Professor Charles Wingo. The proposal has been submitted, but to date there has been no ruling as to its acceptance. This request has been made as a continuation and expansion of his $500 seed grant mentioned in previous reports.

7. Final reports for seed grants to Mr. Hill, Mr. Waltershausen, and Mr. Wills have been received. Mr. Nichols, Registrar, will submit an interim report shortly and will make a final report as soon as the questionnaires concerning his study have been returned to him. One additional seed grant could not be requested by Dr. Milton Bowman, Biology, due to insufficient time to complete the study.

8. Transferring of pertinent information to the aperture card for the microfilmed MC college transcripts (par. 5, progress report dated 7 Jan 70) is now being accomplished by means of the dummy decks prepared by this office and will be a continuing process.

9. A study was made of the grade point averages of all male students participating in athletics as compared with the male population for each term of the 1967-8 academic year at Monmouth College. The cumulative grade point averages of each group were also compared.

10. The primary function of this office has been to develop a pertinent student data bank utilizing the data processing capabilities of Monmouth College and the computer facilities of Knox College. Among the many and varied tasks assigned to or volunteered by the undersigned were:

a. Preparation of a list of chemistry majors and their scores over a five-year period for a research project at Knox College.

b. Listings were made of speech majors and their grade point averages for the MC speech department.

c. A random selected list of freshmen was prepared for study by the Admissions Office.

11. An additional month of work was allowed due to a reallocation of funds. This made it possible to make a closer check on the existing student data bank, spend more time as consultant for the seed grant participants, and prepare for the transfer of records to the Registrar of Monmouth College, Mr. John E. Nichols, who will act as the Director of Institutional Research for the coming academic year.

This three-year grant has made possible the establishment of a data processing operation which enables administrative personnel and faculty members to obtain pertinent academic information concerning students enrolled at Monmouth College. The grade distribution and teaching load reports should be programmed for a computer operation in the near future.

The undersigned is indeed grateful to have participated in what he believes to be a significant improvement and upgrading of the capabilities of institutional research at Monmouth College.

Very truly yours,

James H. McAllister

James H. McAllister, Director
Institutional Research

Incls.

TEACHING LOADS 1969-70

	Registrations				Full Course Equivalent				Faculty FTE	FCE/FFTE
Term	1	2	3	Total	1	2	3	Total		
Department										
Art	255	230	303	788	184.5	164.0	225.5	574	3	191.3
Bible & Rel.	89	142	188	419				419	2.375	176.4
Biology	234	259	106	599				599	5	119.8
Chemistry	107	83	55	245				245	5	49
Classics	45	31	76	152				152	0.5	304
Economics	246	273	213	732				732	4.75	154.1
Education	233	234	232	699	217.0	212.0	232.0	661	3.5	188.9
English	462	456	410	1328	458.6	448.0	404.7	1311.3	8	163.9
French	123	107	80	310				310	3	103.3
Geology	85	98	94	277				277	3	92.3
German	53	32	34	119				119	2	59.5
Government	247	178	232	657				657	2.625	250.3
Greek	3	13	9	25				25	0.375	66.7
History	353	306	329	988				988	5.5	179.6
Japanese	20	16	21	57				57	1	57
Latin	24	21	12	57				57	0.75	76
Mathematics	292	226	177	695	276.7	213.3	165.7	655.7	5.625	116.6
Music	215	214	193	622	96.0	105.7	94.1	295.8	4.5	65.7
Philosophy	76	123	130	329				329	2	164.5
Phys. Ed.	550	474	534	1558	77	86	66	229	5.75	39.8
Physics	100	102	38	240				240	4	60
Psychology	222	201	218	641				641	3.625	176.8
Russian	1	-	-	1				1	0.125	8
Sociology	249	222	241	712				712	3.375	211.0
Spanish	143	134	107	384				384	4	96
Speech	229	228	223	680	200.7	184.0	187.5	572.2	4	143.1

Incl 2

ADEMIC FACULTY EFFORT REPORT: Term_____, 1969-70

or: _____, _____ _____ _____ _____ _____

Last Name | First Name | Middle Initial | Sex | Marital Status | Department

Rank and/or Administrative Title
(1) Full: ( ) (check)
Part: (percent)

Employee No. | Highest Degree | Appointment

Indirect Instruction	Direct Instruction							Number of Registrations			Non-instructional Activities (Released Time Only)	
Est. Clock Hours/Week	Subject	Course Number	Term Credit	Section Type	Section No.	Clock Hr./Wk.	Note (2)	Lower	Upper	Total	Activity	Estimated Clock Hours/Week
	ON CAMPUS INSTRUCTION:											
SUPERVISION												
(3)											RESEARCH, Departmental	
											RESEARCH, Organized or Sponsored	
											ADMINISTRATION	
											COUNSELING	
											LIBRARY	
	OTHER PROGRAMS:										OTHER (Specify)	
	TOTAL:										TOTAL	

THE DEPARTMENT CHAIRMAN: Indicate below the full time equivalent distribution of this faculty member's effort.

Account No. & Source	Instruction: Direct	Instruction: Indirect	Research: Departmental	Research: Organized/Sponsored	Administration	Counseling	Library	Other	Appt. Percent
Total Contract Time (FTE) - This Term in This Department									

I certify that the status of the staff member named on this form is: (CHECK ONE)
__Active, FTE status shown above Inactive: a.___On Leave-Full Pay b.___On Leave-Part Pay c.___On Leave-No Pay d.___On Sick Leave e.___Emeritus

DATE DUE_____ _____ _____
Signature of Department Chairman Date

(1) Total contract appointment: Administrative (12 mo.) Faculty (10 mo.)

(2) "S" in this column indicates instruction in section is shared between members: "C" indicates the section is taught concurrently with another section. Explain on the back of this form

(3) Cross reference part time in another department and indicate nature of supervision.

WHEN COMPLETED, RETURN THIS FORM TO DEAN OF THE COLLEGE.

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APPENDIX XXXIII

REPORT OF CORD GRANT

AT

FRANKLIN COLLEGE

BY PAUL T. NUGENT

DIRECTOR OF INSTITUTIONAL RESEARCH

July, 1970

INTRODUCTION

Franklin College was part of this CORD group for only one year. Thus its status in terms of institutional research is at a different point than the other two colleges who were participants for the full three years.

The report will consider the different aspects of the grant here at Franklin. These are: (1) the Computers assisted Long Range planning model (2) the development of a computer oriented data processing system (3) the development of research capabilities in college education by the faculty (4) the undertaking of institutional research

CAP:SC

In the summer of 1968, Franklin College became interested in the possibility of working with a long range planning simulation model. The initial point of interest was a seminar conducted by Peat, Marwick and Mitchell using their RAPID model for long range college planning. From this seminar, eight colleges joined together to undertake the construction of this model. When Franklin joined the CORD group, it had already undertaken all but the implementation phase. However, it was this phase that involved the data gathering procedure.

At present, the CAP:SC model has been implemented at Franklin College. Because this implementation came after the close of the school year, Knox and Monmouth will be invited to the fall conference demonstrating this model. The appendix includes sample reports from this model. It should be noted that these reports include staff, course, and student information as well as financial and plant information.

While many interesting features of the model cannot be discussed in the limited space of this report, it should be noted that the use of parameter variables enables one to adjust the model to different types of colleges. For example, Franklin College was considered to have two divisions, its regular year and summer school classes. However,

another college might wish to have more divisions and these would not have to be devided along the same lines as the division presently made at Franklin. Another feature is the ability to change environment variables, and thus test hypotheses about the varying number of situations that one might face. For example, one might run one set of simulations with the assumption of a large number of applicants and then a second one with a small number and thus compare the results.

It is too early to evaluate the overall impact of the SEARCH model on the Franklin College planning, but in terms of ability, the college now has a tool that will enable them to investigate alternatives in their planning in a gew minutes rather than a few years.

The Development of A computer oriented Data Base.

While Franklin College had instituted a unit-record data system in the 1960's, the system left many things to be desired. In many cases much of the available information was in hard copy rather than in punched card or other types of data-processing media. Certain other records, particularly of follow up of graduates were not complete. This is not to imply criticism of the past work, but simply to indicate that the college had not been research minded in its preservation and collection of data.

In order to update the system, consultation was made with Knox on their data-processing and information system. Franklin also obtained a TC-500 Burroughs computer with plans to connect this by telephone to a large computer. The Franklin system has been revised in terms of data handling and information flow to be more in line with the Knox system. The student record will begin with his first contact and continue through graduation, with the alumni record being the end result. In addition to changing the starting point, an academic register was set up, which will be used primarily for research purposes.

As further implementation of this system, programs were developed for the TC-500 that would enable handling of data. A test scoring, and item analysis program was developed, as well as linear regression and chi-Square tests. In addition programs were developed for picking up information from one set of cards (such as copying ID and test scores) and placing this on a second card.

Since part of the computing work was to be done at the Columbus computing center, programs were also developed for there. Included in this task was the adaption of the Bio-Med routines to fit this computing center.

Franklin thus developed a computer compatible data basis along the lines of Knox and Monmouth, but emphasizing a time sharing approach to the computer problem. While the implications of this approach are not primarily institutional research oriented, the aspect of a small college having access to a large computer for a small investment does have important implications in the area of institutional research. Powerful research programs such as the Bio-Med routines are available. Simulation possibilities become much more attainable. While the Franklin simulation at this point is limited to long range planning, other types of simulation are available. An example of this is the Computer Simulation models of economic systems developed at Ohio State University.

General CORD Activities

As covered in the Knox report, Franklin participated in several conferences with Knox and Monmouth. In addition, two Franklin faculty members attended the CORD Training Conference in Monmouth, Oregon. Following this they conducted a workshop at Franklin College.

Materials from the CORD conference have been placed on faculty reserve in the library and training will be able this coming academic year also.

Franklin College received six seed grants under the seed grant program. Three of these were in the education department, one in history, one in physical education and one in sociology. Out of these grants, there will be some applications for small projects grants.

Franklin hosted a meeting of Indiana small college persons interested in small projects research. Dr. Melville and Dr. Murnin conducted the sessions. Out of this there has been an interest in forming some type of group to at least communicate ideas between the colleges. A follow up meeting is planned for the fall semester of the 1970-71 academic year.

INSTITUTIONAL RESEARCH AT FRANKLIN

After receiving the CORD Grant, Franklin college established an office of institutional research, which was to assume duties formerly carried out through individual offices. This was staffed by the director, on 1/4 time and a full time secretarial assistant. This office has been continued into the 1970-71 academic year even though the grant has ended.

In addition to the research development work carried out as discussed in the above, Franklin undertook several institutional research projects. These include the sophomore comprehensive already summarized in the interim report. Other studies were in the area of admission, in regard to a special admissions program and in the area of Foreign language.

The foreign language study is still underway and will not be completed until the end of the fall semester. The special admissions program results are summarized here and tables from this are included in the appendix. The program was initiated in an effort to prepare marginal college students for college in a pre-college session. The results

for the summer of 1969 are at best "noisy", due to the inexperience of the staff in conducting the program. A study of the 1970 group will be undertaken and should provide a control group. The control group also is not a perfect match, since due to the nature of the problem, these persons in the control group would tend to be more likely of college success than those in the summer program.

The admissions study was in several parts. One part was designed to yield a prediction equation and test the relationship between entrance scores and freshman GPA. A second part of the study reviewed the relationship of entrance date to college performance. A third part of the study evaluated alternative methods of predicting college success.

The results of the GPA correlation study are included in the accompanying table. The correlation coefecients were obtained separately for men and women. It should be noted that a higher coefficient was obtained for men than women. High school class rank was the best single predictor.

The results of the comparison of prediction formulas is shown in the second table. The 1967 predictions were made with a split being made only between men and women. The 1968 prediction formula was made with a split made in each of these groups at the 2.00 level. The results show a .54 correlation for the 1967 formula and a .52 for the 1968 formula. While these differences are slight, the trend is interesting. It is apparent that the later formula did not improve the prediction as might have been expected.

The third area of research is shown in the accompanying tables on date of admission. To do this the date of admission was checked for both students in school and those not in school. A correlation between admission date and achievement was then run. The results indicate that the date of admission is not critical factor per se.

The results of the pre-college session are included in the accompanying table. These indicate that the pre-college session did not do significantly different than the match group in either the area of overall achievement or in the area of English composition and literature. While these results are not encouraging in the sense of having shown significant improvement, they must be used with two notes of reservation. First that noted early that the match group was not matched perfectly and secondly that several changes were made in the program for the second year that adversely affected this group. For example, the group felt isolated when it was here just prior to the start of school, with no other students on campus.

CORRELATION OF ACHIEVED AND PREDICTED CPA

1967 FORMULA

Coefficient of determination 0.2930

Multiple Correlation coefficient 0.5413

Standard error of estimate 0.40917

Achievement Freshman GPA

Variable No.	Mean	Standard Deviation	Regular Coefficient	Computed T Value
5	1.78873	0.75023	0.34988	7.61754
4	1.86690	0.48491		

1968 FORMULA

Coefficient of determination 0.2806

Multiple Correlation coefficient 0.5297

Standard error of estimate 0.44542

Achievement Freshman GPA

Variable No.	Mean	Standard Deviation	Regular Coefficient	Computed T. Value
5	2.20226	0.66946	0.41436	8.26199
4	2.03955	0.52366		

PRE-COLLEGE SESSION STATISTICS

	Ave. Fresh. GPA	S.D.	Ave. Grade in Comp.	S.D.
Pre-College Group	1.66	.55	1.4	.88
Match Group	1.8	.60	1.5	1.1

Number in Pre-College group 27

Number in Match group 20

$$Sp^2 = \frac{(N_1-1)S_1^2 + (N_2-1)S_2^2}{N_1 + N_2 - 2}$$

$$T = \frac{X_1 - X_2 - (0)}{Sp\ \sqrt{1/N_1 + 1/m}}$$

Test for significant difference in means of Freshman GPA/

T Value = 1.242 Degrees of freeden 45 Not significant at .05 or .01 level

Test for significant difference in means of Comp. grades

T Value = 1.086 Degrees of freeden 45 Not significant at .05 or .01 level.

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SAMPLE-LONG RANGE PLANNING REPORT

DECISIØN SET 0 ENVIRØNMENT SET 0 21.17.49 07/24/70

FRANKLIN CØLLEGE

FACILITIES PLAN

YEAR	1970	1971	1972	1973	1974	1975
ENRØLLMENT	882	20	84	313	337	449
ØN CAMPUS	483	-43	-48	44	-165	-23
PCT HØUSED	62	-6	-10	-17	-31	-22
DØRM CAPACITY						
MALES	311	0	0	0	0	0
FEMALES	211	0	0	0	0	0
DINING HALL CAPACITY	275	0	0	0	0	0
DINING HALL UTIL.	282	-13	-4	52	41	98
CLASS RØØM UTILIZATIØN						
DAY CØLLEGE						
UNDER 20 SEATS	461	0	0	0	0	0
20 TØ 40 SEATS	72	0	0	0	0	0
41 TØ 55 SEATS	2	0	0	0	0	0
ØVER 55 SEATS	5	0	0	0	0	0
SUMMER SCHØØL						
UNDER 20 SEATS	292	0	0	0	0	0
20 TØ 40 SEATS	72	0	0	0	0	0
41 TØ 55 SEATS	2	0	0	0	0	0
ØVER 55 SEATS	5	0	0	0	0	0
NUMBER ØF CLASSRØØMS						
UNDER 20 SEATS	2	0	0	0	0	0
20 TØ 40 SEATS	8	0	0	0	0	0
41 TØ 55 SEATS	19	0	0	0	0	0
ØVER 55 SEATS	4	0	0	0	0	0
LABØRATØRY UTILIZATIØN						
DAY CØLLEGE	66	2	8	17	28	38
SUMMER SCHØØL	0	0	0	0	0	0
NUMBER ØF LAB STATIØNS	230	0	0	0	0	0
STUDENT STA UTIL.						
DAY CØLLEGE	19	1	2	3	8	10
SUMMER SCHØØL	0	0	0	1	0	0
NØ ØF FACULTY - TØTAL	60	0	0	0	0	0
NØ. ØF ADMIN. STAFF	41	0	2	6	8	11
TØTAL ØFFICES	111	0	0	0	0	0

SAMPLE-LONG RANGE PLANNING REPORT

DECISION SET 3 ENVIRONMENT SET 4 21.24.10 07/24/70

FRANKLIN COLLEGE

REG. SESSION STUDENT PLAN

	YEAR 1970	1971
FRESHMEN ACCEPTED	450	483
ENROLLED - TOTAL	770	835
FRESHMEN	293	313
SOPHOMORE	194	234
JUNIOR	158	147
SENIOR	125	141
STUDENTS ON CAMPUS	483	466
AVE CLASS SIZE	17	17
CREDIT HOURS - TOTAL	21741	25603
FRESHMEN	9083	9703
SOPHOMORE	4919	7254
JUNIOR	4227	4557
SENIOR	3372	4089
DEGREES AWARDED	122	133

READY

>REPORT FP1

SAMPLE-LONG RANGE PLANNING REPORT

DECISION SET 3 ENVIRONMENT SET 4 21.26.13 07/24/70

FRANKLIN COLLEGE

REG. SESSION FACULTY PLAN

	YEAR 1970	1971
NO OF FACULTY - TOTAL	55	55
PROFESSORS	9	9
ASSOCIATES	16	16
ASSISTANTS	23	23
INSTRUCTORS	7	7
ADJUNCT	0	0
AVG SALARY		
PROFESSORS	12385	13128
ASSOCIATES	10481	11109
ASSISTANTS	9270	9826
INSTRUCTORS	7823	8292
ADJUNCT	1011	1071
AAUP RATING		
PROFESSORS	0	0
ASSOCIATES	0	0
ASSISTANTS	0	0
INSTRUCTORS	0	0
ADJUNCT	0	0
PCT OF TIME ON		
INSTRUCTION	100	100
SPONS RESEARCH	0	0
INTERNAL RES	0	0
FACULTY LOAD (HRS/YR)	26	26
STU/FAC RATIO	14	15
COURSES TAUGHT	158	158
SECTIONS TAUGHT	226	226
AVG CLS SIZE	17	17
TOTAL CREDIT HOURS	21741	25603

INQUIRIES CONCERNING KNOX COLLEGE INSTITUTIONAL RESEARCH
1968 to November, 1969

INSTITUTION	LOCATION (State)	DATE SENT
Duke University (Doctoral student)	North Carolina	1-12-68
Goucher College	Maryland	2-13-68
Jacksonville University	Florida	2-19-68
Visual Statistics, Inc.	New York	4-11-68
Franklin and Marshall College	Pennsylvania	4-22-68
Seton Hill College	Pennsylvania	4-23-68
College of Insurance	New York	4-23-68
Austin College	Texas	10-16-68
University of Texas at Arlington	Texas	4-22-68
Reed College	Oregon	4-29-68
Albion College	Michigan	5-2-68
Nebraska Wesleyan	Nebraska	5-6-68
Oregon College of Education	Oregon	5-12-68
Nasson College	Maine	5-8-68
Principia College	Illinois	6-26-68
Coe College	Iowa	8-26-68
Washington State University	Washington	10-14-68
Wofford College	South Carolina	1-3-69
Culver-Stockton College	Missouri	12-16-69
Virginia Polytechnic Institute	Virginia	1-14-69
Changing Times (Educational Editor)	Washington, D.C.	1-24-69
Western Illinois University (student)	Illinois	2-18-69
University of Windsor	Ontario	3-5-69
Carson-Newman College	Tennessee	3-5-69
New College of Hofstra	New York	3-18-69
Goddard College	Vermont	4-17-69
American Council on Education	Washington,D.C.	4-1-69
Bacon Pamphlet Service, Inc.	New York	4-1-69
Bridgewater College	Virginia	4-18-69
University of Missouri	Missouri	7-7-69
Baptist Bible Seminary	Pennsylvania	5-8-69
Reg. Educ. Lab. for the Carolinas & Virginia	North Carolina	6-23-69
College of the Albemarle	North Carolina	8-5-69
Florida State University	Florida	8-18-69
University of Ill. Chicago Cir. (Student)	Illinois	9-11-69
Miami University	Ohio	9-11-69
Augustana College	South Dakota	9-19-69
Jamestown College	North Dakota	9-22-69
Concordia College	Minnesota	10-6-69
University of Northern Iowa	Iowa	10-23-69
Wheaton College	Illinois	10-24-69
Thomas More College	Kentucky	10-28-69
Kalamazoo College	Michigan	10-28-69
Lincoln College	Illinois	11-4-69
Marycrest College	Iowa	11-14-69
Colorado College	Colorado	11-14-69

INQUIRIES CONCERNING KNOX COLLEGE INSTITUTIONAL RESEARCH
January, 1970 to date

INSTITUTION	Location	Date Sent
Milton College	Wisconsin	1-21-70
San Francisco State College	California	2-2-70
Goshen College	Indiana	2-5-70
University of Washington	Washington	2-5-70
Jackson State College	Mississippi	2-10-70
Drury College	Missouri	3-2-70
Coe College	Iowa	3-9-70
Susquehanna University	Pennsylvania	3-17-70
Florida Agr. & Mechanical University	Florida	3-31-70
Associated Colleges of the Midwest (ACM)	Illinois	3-30-70
Comm. on Higher Ed. Finance	Arkansas	4-3-70
East Central State College	Oklahoma	4-3-70
Georgia Southern College	Georgia	4-3-70
Carleton College	Minnesota	4-8-70
McKendree College	Illinois	4-13-70
Willamette University	Oregon	4-29-70
Drury College	Missouri	4-29-70
Wisconsin State University	Wisconsin	6-2-70
Culver-Stockton College	Missouri	6-29-70
The University of Santa Clara	California	7-13-70
Middle Tennessee State University	Tennessee	7-27-70
Carleton College	Minnesota	8-10-70

VISITORS TO KNOX COLLEGE CONCERNING INSTITUTIONAL RESEARCH

Name	Position	Institution
David McBlain	Director of Data Processing	Austin College
Peggy Heim	Director of Institutional Research	Furman University
T. Ray Nanney	Director Computer Center	Furman University
Jack Rossman	Professor of Psychology	Macalester
Henry West	Professor	Macalester
B. B. Ballard	Professor of History	Principia
M. Alan Brown	Academic Dean	Blackburn
Henson Harris	Academic Dean	Culver-Stockton
James Johnson	Director Computer Education	Iowa Wesleyan
Theodore Johnson	Director Testing & Guidance	North Park
Howard Johnson	Academic Dean	Iowa Wesleyan
J. A. Neitmann	Assistant to President	Principia
T. L. Pittenger	Director of Institutional Research	Culver-Stockton
Donald Raley	Registrar	Blackburn
Donald Typer	President	Miss. Valley Assoc.
Reynold Vahn	Director of Records	North Park
Russell Weigand	Assistant Dir. of Development	Elmhurst
Sister Margaret	President	St. Joseph (Maryland)
Baird Tenney	Research Analyst	Robert Heller Associates
H. K. Polk	Registrar	Colorado College
Ben Sprunger	Director of Institutional Research	Wheaton College
J. W. Naucher	President	University of N. Iowa
William L. Dunn	Provost & Dean of the Faculty	Lake Forest College
William Hoogesteger	Dean of Students	Lake Forest College
James McAllister	Associate Professor of Mathematics	Monmouth College
James Herbsleb	Chairman, Department of Economics	Monmouth College
Paul Nugent	Director of Institutional Research	Franklin College
Ronald Montgomery	Assistant Professor of Psychology	Franklin College
Richard M. Park	Dean of the College	Franklin College
David C. Naile	Registrar	Franklin College
Ida Wallace	Director Washington Assoc. Col. Mid.	
Sumner Hayward	President, Assoc. Col. of the Midwest	

May, 1970

~~APPENDIX D.~~ ERIC REPORT RESUME

OE 6000 (REV. 9-66)

DEPARTMENT OF HEALTH EDUCATION AND WELFARE
OFFICE OF EDUCATION

ERIC REPORT RESUME

(TOP)

ERIC ACCESSION NO

CLEARINGHOUSE ACCESSION NUMBER

RESUME DATE 9-15-70 | P A | T A

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TITLE

100 ACADEMIC DECISION MAKING: THE CONSORTIUM OF KNOX, FRANKLIN
101 AND MONMOUTH COLLEGES
102
103

PERSONAL AUTHOR(S)

200 DR. GEORGE L. MELVILLE

INSTITUTION SOURCE

300 KNOX COLLEGE, GALESBURG, ILLINOIS

310 REPORT/SERIES NO.

OTHER SOURCE

320

330 OTHER REPORT NO.

OTHER SOURCE

340

350 OTHER REPORT NO.

400 PUBL. DATE 9-15-70 CONTRACT GRANT NUMBER OEG-1-7-070178-4299

PAGINATION, ETC

500 Project No. 7-E-178X
501

RETRIEVAL TERMS

600 Institutional Research
601 Academic Development
602 Data Retrieval Systems
603
604
605
606

IDENTIFIERS

607

ABSTRACT

800 This consortium of liberal arts colleges was instru-
801 mental in developing and coordinating their research capabil-
802 ity through data processing. Forty research and academic
803 development projects were undertaken. Of special importance:
804 The Pass-Fail System, Study Habits in the Three-three calen-
805 dar, Changing Trends in Attrition, The Weighting of High
806 School Class Ranks, Development of a Long-Range Planning
807 Model, Coordination of Graduation Check Accounting with
808 Academic Development Records, Computer Orientation in Enroll-
809 ment. Of twenty-five "seed grants" two have blossomed as
810 funded research projects: Dr. Pillsbury's Development of a
811 Computer Augmented Accounting Course received $29,000 from
812 three sources. Dr. Ballard's program for Directing and
813 Advising Political Science Majors received a $10,000 USOE
814 Small Projects Research Grants. Proposals for two other
815 projects are pending with USOE.
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BR 7-E178

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FINAL REPORT

Part Two

ACADEMIC DECISION MAKING: THE CONSORTIUM OF KNOX, FRANKLIN AND MONMOUTH COLLEGES

Dr. George L. Melville

Knox College

Galesburg, Illinois

September, 1970

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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ED050705

FINAL REPORT
PART TWO

Project No. 7-E-178X

Grant No. OEG-1-7-070178-4299

ACADEMIC DECISION MAKING, THE CONSORTIUM OF KNOX, FRANKLIN AND MONMOUTH COLLEGES

THE SEED GRANTS

Individuals Submitting Research Reports:

Rene N. Ballard
Henry P. Houser
Wilbur F. Pillsbury
Charles E. Wingo
John R. Graham
Peter S. Hill
Ruth Callan
Doreen St. Clair
Thelma Tsismanakis
William C. Ripperger
Terry Keeling
George L. Melville
John W. Boyd
Robert Shellenberger
Ruth Holland
Duane Moore
Douglas Wilson
Ronald Montgomery
William Matthews
Karl C. Helms
Ben R. Dotson
Donald Wills
Helen Jean Nugent
George L. Waltershausen
John E. Nichols

September, 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinons do not, therefore, necessarily represent official Office of Education position or policy.

PART TWO

Introduction: The Seed Grants Awarded by the Consortium of Knox, Franklin, and Monmouth Colleges

During the three years of the consortium, twenty-five seed grants were awarded to faculty and administrators for the support of educational research and development. Twelve of the grants were awarded to Knox faculty, seven to Franklin faculty, five to Monmouth faculty and one to a faculty member of Lake Forest.

These grants were made on the basis of their relevance to educational development at the respective colleges, on the basis of their generalizability to other colleges, and on the basis of their promise as expandable projects. Some of these grants supported pilot studies involving experimentation in teaching methodology. Some awards were made for planning large projects to be undertaken with college supports once the planning was completed. Evaluational studies of specific aspects of the college curriculum were given support. Innovations in advising and in enrollment procedures involving extensive computer programming were included in the seed grant program.

Five of the seed grant proposals have led to proposals for larger grants, two of which have been funded and two of which are being considered. Dr. Pillsbury's proposal involving Computer Augmented Accounting Instruction has been supported by a $9,000 grant from the Alfred Sloan Foundation, a $9,000 grant from IBM, and a $5,000 grant from the Esso Foundation. Dr. Ballard's pilot study on Selection and Direction of Political Science Majors was supported by a $10,000 Small Projects grant from USOE. Dr. Melville's project to Establish Class Size Standards relative to Course Design and Mr. Wingo's pilot study on the Use of Video Tapes in Teaching Linguistics are pending as $10,000 Small Project proposals to USOE. Dr. Houser's project on Value Stratification as Related to College Performance was submitted to USOE as a Small Projects proposal but was not funded.

Two of the seed grants supported projects which were not completed. Mr. Will's plan to use Video tapes of aerial landscapes in introductory Geology came to naught when his film was accidentally overexposed. Mr. Nichols study of the interrelationships between the Office of the Registrar, Institutional Research and Data Processing at liberal arts colleges was not completed within the required time. In both cases unspent funds were returned to the consortium.

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Part Two

Proposals and Final Reports

Grant Number	
I	Suitability for Majoring in Political Science and Directed Assistance and Counseling of Political Science Majors--Rene N. Ballard
II	Value and Stratification at Knox College--Henry P. Houser
III	Computer Augmented Accounting Education at Knox College--Wilbur F. Pillsbury
IV	Development of Video Tapes on Word Recognition Skills, Phonic and Structural Analysis, Using a Modified Linguistic Approach for Teacher Education in the Teaching of Reading and Related Language Arts--Charles E. Wingo
V	Predicting Success in College--John R. Graham
VI	The Kinesthetic Learning Approach VS the Traditional Approach in the Teaching of Musical Instruments--Peter S. Hill
VII	Current Practices and Problems in Physical Education In Elementary Schools in Selected School Districts in Central Indiana--Ruth Callon, Doreen St. Clair
VIII	Implementing Research Techniques in the Teacher Preparation Program--Thelma Tsismanakis, Leland Erickson
IX	Computer Oriented Enrollmant at Knox College--Programming: William C. Ripperger, Terry Keeling; Report, George Melville
X	Early Classroom Experiences for Elementary Education Majors--Thelma Tsismanakis
XI	An Experiment in Existential Modes of Learning--Robert Shellenberger
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XIII	Coordination of Academic Development Records with Graduation Check Accounting--Programming: William C. Ripperger, Terry Keeling; Report by George L. Melville

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XVI	A Basic Compiler--William C. Ripperger, Terry W. Keeling
XVII	The Establishment of Class Size Standards Relative to Course Design--George L. Melville
XVIII	Evaluation of the Freshman Seminar--Lewis S. Salter Recommendations for Change in the Structure of the Knox College Freshman Seminar--William Matthews
XVIX	Audiovisual Material as Media for Design Instruction--George L. Waltershausen
XX	Effective Utilization of Services of Data Processing, Institutional Research, and Office of the Registrar for More Efficient Operation of the Small Liberal Arts College--John E. Nichols
XXI	Development of Video Tapes for Use in Introductory Geology--Donald Wills
XXII	The Franklin Student-A Demographic Study of the Student Population of Franklin College of Indiana, 1969-1970--Ben R. Dotson
XXIII	A Study of the Relationship of Immigration to the Curriculum in U.S. History--Helen Jean Nugent
XXIV	Seed Grant Proposal for Planning a Special Studies Program--Karl C. Helms
XXV	Tutorial Mode of Instruction in Physics Education on the IBM 1130--John W. Boyd

GRANT NUMBER I

SUITABILITY FOR MAJORING IN POLITICAL SCIENCE AND DIRECTED ASSISTANCE AND COUNSELING OF POLITICAL SCIENCE MAJORS

A proposal for a Seed Grant to Support a Pilot Study

Submitted by

Dr. Rene N. Ballard

Professor of Political Science
Knox College

November, 1967

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The Problem

Until very recently Political Science was a loose association of vaguely related fields in which there were few agreed upon demands. On the undergraduate level the acquisition of specific skills was seldom insisted upon, and many Political Science departments became a haven for large numbers of non-directed, poorly motivated students. All this has substantially changed. It has become necessary that undergraduate Political Science majors obtain a disciplined orientation to the investigation of political problems. Graduate Departments of Political Science favor applicants presenting solid credentials in economics, statistics, computer science and research methods; they are also more demanding in their expectations that students be well trained in particular areas of the discipline. In addition, the increased demand for political scientists with less than a Ph.D. at various levels of government and business[1] makes it imperative that Political Science majors be directed in the early stages of their training towards acquiring the skills and analytical tools necessary to their effective functioning in these positions.

The Political Science department at Knox College can no longer sanction large numbers of majors who select the field with no particular interest in acquiring or using its disciplines. Beginning at the introductory level we must structure courses essential to the major in such wise that our majors develop an attitude and posture requisite to their functioning as political

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[1] The allusion here is to the increased demand for city managers, legislative reference technicians, political opinion analysts and to business demands for knowledge in administrative processes.

scientists.[2]

Admittedly, the restructuring of the training in a major is easier said than done. We do not have concrete evidence as to the efficacy of some of our suggested orientations. Disagreements persist. We propose to proceed experimentally. Ultimately we intend to produce superior baccalaureates in Political Science; our short term measurement of success will be Graduate Record Examination scores as correlated with variations in original and subsequent readings of specially constructed indexes. A pilot study involving the construction and use of one such index is proposed below.

The Purpose of the Pilot Study

Our pilot study will involve the construction of an "options open index". A student's original index will be derived from answers to specially contrived questions interspersed in the introductory course in Political Science. Each of the four instructors conducting this course (the course is a departmental undertaking) will rate the student from 1 to 4 as to his ability to keep options open. The ratings of the four instructors will then be cumulated, thus providing a scale of 4 to 16. The specific instruments detailing the questions and the achievement of inter-observer reliability of the scaling of answers will be derived in the course of the study.

---

[2] Our shortcomings in this direction in the past is confirmed by advice from some students who have encountered specific difficulties in graduate school.

The options open indices of the students will be correlated with an "Authoritarian Personality Index Scale".[3] This index provides a measure of an individual's rigidity of opinion. If a strong correlation exists between this measure and the options open index the "Authoritarian Scale" will be used as a first measure of "options open" for beginning students in the large follow-up study.[4]

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[3] Adorno, T. W. et.al The Authoritarian Personality; Harpers, New York, 1950. Much work has already been done relating to political aptitude. Agger, Goldstein and Pearl have attempted the measurement and interpretation of "Political Cynicism" (Journal of Politics, vol 23, p. 477) Scharr has developed an "Anomie Scale" cross tabulating Guttram four item scale with a "Campaign Activity Index" (Milbrath, L. W. Political Participation, Rand, McNally, Chicago, 1965.) An unpublished survey of student attitudes has been carried out by the Political Science department at the University of Maryland.

[4] In the longer range study our experimental group will be sophomores declaring a major in Political Science. Depending on the results of the pilot study, these students will be measured for "options openness". Those students showing specific weakness in this variable will be subjected to specific conditioning in various courses in their major. The tests for options openness will be given in their senior year and the degree of change tested for statistical significance.

GRANT NUMBER I

SUITABILITY FOR MAJORING IN POLITICAL SCIENCE AND DIRECTED ASSISTANCE AND COUNSELING OF POLITICAL SCIENCE MAJORS

A Report on a Pilot Study

Submitted by

Dr. Rene N. Ballard

Professor of Political Science
Knox College

Attachment 1

Introduction

The Political Science Department at Knox College undertook a study which would assist in identifying student suitability for majoring in Political Science, would assist the staff in counseling majors, and would produce information which would make it possible to offer more directed assistance to majors in classes.[1] The study undertook to characterize competent political scientists as those who dealt with the material of the discipline in a way that kept options open. For the purpose of measuring this characteristic the pilot study undertook to design an "options open" measuring instrument.[2] The study further undertook to test Political Science majors and students enrolled in American Government on the "options open" as well as the standard 40-item "Dogmatism" test.[3] One of the purposes of using the "Dogmatism" test was to determine if the characteristic identified in competent political scientists was the same as measured by the Dogmatism scale. Test scores on both dogmatism and "options open" were to be measured against grades in the American Government course and, in case of Political Science majors, with grades in other political science courses.

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[1] See attached pilot study request.

[2] See attachment 2 of this report for the explanation and the instrument used.

[3] See attachment 3 for this instrument. (Funds supporting the use of this instrument were supplied by Knox College.)

Procedure

The Dogmatism and Options Open tests were given to 47 of the 58 departmental majors, as well as to 42 of 65 members of the introductory American Government course, without detailed reference as to the precise usage of the results by the department. All persons received assurance that their replies would be kept in confidence, and that in no way would individual answers or scores be used to prejudice their standing with the department. The tests were administered in the last week of the first academic term in December, 1967. A second group of 44 students, all members of the introductory course, was administered the two tests in the first week of the second term (January, 1968). The sample thus far may therefore be divided into three sections: majors, non-majors who had just completed the introductory course, and non-majors starting the introductory course. Plans for further study call for the administration of the tests again, to a third group of students who will be starting the course in the beginning of the third term.

Additional data were collected for each student taking the test, including sex, high school class by decile, class, major, verbal and mathematical SAT scores, and final grades for those who had completed the introductory course. The techniques used for analysis is that of multiple regression. Two depandent variables have been tested to date, final grade in the introductory course and score on the Rokeach Dogmatism test. A third independent variable, average in all political science courses, is scheduled for analysis in the near future on the sub-sample of departmental majors.

Findings

Results of the multiple regression, taking final grade in the introductory course as the dependent variable may be seen in Table 1.

TABLE I

SELECTED VARIABLE CONTRIBUTING TO FINAL GRADE IN INTRODUCTORY AMERICAN GOVERNMENT COURSE; KNOX COLLEGE, FIRST AND SECOND TERMS, 1967-1968 (N = 133)

Independent Variable	Correlation with Final Grade
Class	-.025
Major	.162[a]
Sex	.087
Class of Intro. Course	.247[a]
Year Intro. Course Taken	-.069[a]
SAT - Verbal	.065[b]
SAT - Mathematics	.202[b]
Dogmatism Score	.008
Options Open Score	.204[a]
H.S. Class Rank	.236[b]
Cumulative Average	.381[b]
Multiple Correlation = .613[c]	

[a] Significant at the .05 level, according to the computed t-value.

[b] Significant at the .01 level, according to the computed t-value.

[c] Significant at the .01 level, according to the F-value.

Eight variables are found to correlate with final grade in the introductory course at a significance level of .05 or beyond. These variables are SAT-Verbal, SAT-Math, Options Open, High School Class Rank, Cumulative Average, Major, and Class and Year of Introductory Course. Of greatest interest is the success of the newly developed Options Open test in that it has a low but positive and significant relationship to final grade received in the course. The yet-to-be-examined relationship between Dogmatism and Options Open, on the one hand, and the various measures of success in the major, such as cumulative average within the department, Graduate Record Examinations, and grade on a Comprehensive Examination taken at the end of the senior year will be of special interest. Taken as a whole, however, the eleven independent variables used thus far, with a limited sample, share a 37.6% common variance with the dependent variable, a variance which is significant beyond the .01 level.

The results of our experimentation with the Rokeach dogmatism test were negative. Correlation of this test grade with the Options Open Index was -.045; statistically insignificant. Moreover, the correlation of this score with the grade in the course was only .008. While other tests should be sought which will dove-tail with the Options Open Index as a predictive measure, the Rokeach test must be abandoned for this purpose.

Discussion/Conclusions

Results thus far are tentative, but highly suggestive that the direction of the research may be fruitfully pursued. Working with a limited sample of 133 persons, those who completed the introductory course by the end of the second term of the 1967-1968 academic year, as well as departmental majors (juniors and seniors), it was possible to isolate eleven variables which have a 37.6% shared variance with performance in the basic course. Included in this is a presumedly important variable which takes the year in which the undergraduate took the course in American National Government, and implicitly tests for differential effects of textbook use. Projected analysis will include the extent to which: (1) the test correlates with performance in the basic course (an r of -.069 has been obtained thus far); (2) the text correlates with ultimate success in the major; and (3) perhaps most interestingly, the extent to which the text correlates with the Dogmatism and Options Open measures.

The study is, obviously, an on-going project, as several additional and needed measures have yet to be developed. At this writing, scores on Graduate Record Examinations and departmental comprehensive grades are not available, inasmuch as neither examination has been administered to the majors. The department hypothesizes that Graduate Record Examinations may be taken only as a marginal predictor of success, the latter being interpreted in this instance as the development of an open mind which is capable of dealing with the political world in as nearly objective a manner as possible. The rationale for the hypothesis as it stands rests

on the nature of the Graduate Record Examinations as conceived by the department, in that it is thought that such examinations tend to favor the student who commits facts to rote memory, with only minimal necessity for individual and open-minded analysis. If the hypothesis is borne out, the utility of the Graduate Record Examination in Political Science will be severely called into question by the department.

Additional measures of success are yet to be made available, such as grades in the comprehensive examination. As conceived and administered by the department, the examination would ideally favor those students who have developed in the direction of open-mindedness which the department feels is crucial in the undergraduate Political Science major. Grades for both the comprehensive and Graduate Record Examinations will be available by the end of May for senior majors, while similar grades for those who are juniors must await the completion of another academic year. The project, therefore, is developmental, and will require further data and analysis. However, results of the attempt thus far to develop a predictive model of success in Political Science are considered to be quite favorable, suggesting the necessity for that further study which has been mentioned.

Options Open Scale:

The test represents an attempt to develop new measures of personality traits which are related to the presumably successful Political Science major. Presented as a scenario in regard to international relations and American response to a hypothetical situation, it asks the student to select from four proposed American policy alternatives. These alternatives have been panel-evaluated as to the extent to which an individual has selected and ranked policy alternatives which would allow the United States the greatest freedom of continuing choice. In sum, it is hypothesized that the "ideal" student would receive a score on the Dogmatism test which is suggestive of a high degree of open-mindedness on his part.

Instructions to the Student: In this exercise you will be given a scenario describing a certain state of affairs in a given country. On the basis of this description, you will be asked to select, from given alternatives, a course of action or policy which you would recommend on the basis of your knowledge and expertise in politics. It is important that you consider the alternative seriously.

Scenario: Three states, Alpha, Omega and Euphanasia, have embarked upon a radical and ambitious program of socio-economic integration. The Association of Alpha, Omega, and Euphanasia, or the AOE, through judicious policies of investment and economic development, are striving for self-sufficiency in terms of agriculture production and light industry.

The political systems of the cooperating powers are diverse, as are their industrial bases. Alpha, a nominally democratic regime with an historical bias toward free enterprise and individual liberties, stands in stark contrast to the military junta controlling Euphanasia. Euphanasian politics, however, are strikingly Marxist in its emphasis on government direction, if not control, of all economic ventures within the country. Of all three countries, moreover, the economic problems associated with development are most severe here. Omega stands midway between these two points, having developed a currently viable economy based on the export of raw agrarian produce and unprocessed mineral ore of a highly scarce nature.

The development plans of the AOE call for, among other major items:

1.-the achievement of agricultural self-sufficiency in the area;
2.-the development of basic industries;
3.-an increasing emphasis on the export of processed raw materials, seen as an intermediate step to the ultimate refinement of these minerals;
4.-open movement of labor and materials across their borders;
5.-the development of mutually advantageous trade relations with all areas of the globe (this is facilitated by the fact that each of the countries has some level of trade relations with all major trade areas: the trade of Alpha centering on the U.S.; Euphanasia on Eastern Europe and the USSR; and Omega with her former colonial masters in Europe.

U.S. involvement with the AOE countries presents particular problems for U.S. decision makers. In the first place, Alpha has been a prime purchaser of U.S. agricultural surplus, a recipient of significant amounts of Americal military aid and has exhibited a traditionally friendly posture twoard the U.S. The maintenance of this relationship has highly vociferous backing among important U.S. interest groups, both agrarian and industrial.

U.S. involvement with Omega has been less intensive, deferring to her European allies. It is no secret, however, that groups decidedly to the left of center have become increasingly vocal in Omegan politics, a fact nervously watched in Washington. The military weakness of Omega is also a factor of considerable import. U.S. trade with Omega, though small in total, has reflected a positive trend in the U.S. balance of payments.

Of all the countries, Euphanasia is the least friendly to the U.S. Early attempts to develop aid and trade policies have foundered on the shoals of alleged

political controls on obstensibly economic aid. The extensive overseas Asian population in Euphanais is also a point of concern as is the fact that her well-equipped army is essentially of Eastern European origin. Euphanasia's emphasis of total government involvement in the economy is likely to be moderated by association with Alpha and Omega, but will result in relative shifts to the left in those countries.

While overall the development program proposed by the AOE is feasible, it could conceivably bear the fruit of U.S. political loss in the area, as well as economic.

As a middle-level political analyst for the U.S. State Department, you are asked to consider four policy alternatives toward the AOE. You are asked to designate one policy that you consider most advantageous, and in very few words to explain why. You are also asked, in a separate exercise, to rank the four policies in terms of their desireability, according to the following scale:

1. most undesirable
2. undesirable
3. desirable
4. most desirable

No explanations are required for the final exercise.

Projected Policy positions toward AOE:

A. All aspects of AOE (political, economic, and military) are in direct opposition to American interest in the area. Consequently, we would suggest pressure for dissolution based on economic and military incentive to Alpha and punitive economic and political sanctions toward Euphanasia. In event that AOE persist, military intervention, based on the probability of Euphanasian subversion of Alpha and Omega, would be appropriate.

B. U.S., recognizing the possibility that the federation would or could result in pressure on American military and economic interest in the area, would utilize all non-military measures appropriate to the protection of its interest there. The close relationship between Alpha and the U.S. and Omega and its European sponsor should be exploited to limit the federations level of cooperation to levels of activity not threatening to U.S. interests there.

C. U.S., recognizing the need for political and economic development in the new states, will take no action designed to discourage such a development. However, U.S. will seek to maintain current levels of intercourse with the area insofar as is possible.

D. U.S. recognizing the need for independence in social, political economic and military matters; and recognizing the need for the development of larger viable economic units in the developing world; will overtly encourage the development of AOE through the availability of development resources and credits; and will seek to guarantee possible losses due to nationalization of American interests in the area if reasonable demonstration can be made that national direction is impossible with continued foreign management.

Preferred policy:

Policy Ranking:

attachment 3

Procedure for Scoring and Interpreting Rokeach's Dogmatism Test:[1]

A standard additive of +4 is applied to all answers. Hence, a reply of -3 (I disagree very much is rescored as +1; a reply of +3 (I agree very much) is rescored as +7. There is no score of +4, as respondents were not offered a reply of 0. The "dogmatism" score for each individual is derived by totaling the scores on the 40 items. Hence, the range will be from 40 (lowest dogmatism) to 280 (highest dogmatism).

Using the above procedure, the 40-item Dogmatism Test has been found to have a reliability varying from .68 to .93.

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[1] Milton Rokeach, The Open and Closed Mind: Investigations into the Nature of Belief Systems and Personality Systems (New York: Basic Books, Inc., 1960, pp. 87-90.

GRANT NUMBER II

THE RELATIONSHIP OF SOCIAL CLASS TO VALUE ORIENTATION

A Proposal for a Seed Grant to Support a Pilot Study

Submitted by

Dr. Henry Houser

Chairman, Department of Sociology
Knox College

November, 1967

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THE RELATIONSHIP OF SOCIAL CLASS TO VALUE ORIENTATION: KNOX COLLEGE STUDENTS

THE PROBLEM

In the post World War II era colleges and universities have experienced increasing diversity in the social class backgrounds of their students. Even the private four year colleges, enjoying large state and federal student aid funds, have taken on a more class representative character. At Knox College there now exists a considerable diversity in the class background of students. A random sample of one-third the 1966 Senior Class (seventy students) was classified on the five point scale of social position provided by Hollingshead (The Two Factor Index of Social Position). The sampled students were classified almost equally into the four upper classes These data suggest that at Knox College a good situation exists in which to seek general associations of class backgrounds and values of college life, both academic and social. We should be able to analyze the way in which the student's social class is related to specific classifications of values and performances.

It is our belief that such research is pertinent to data oriented academic decision making. It is commonplace that college faculties and administrations find themselves understanding students in terms of a completely distorted image of the way students from particular backgrounds think and react in a college community. We lean on wisdom because of the presentiment that many sociological variables cannot be measured. We like figures we can feel are concrete. We can relate high school class rank and performance of SAT to the extent that we use these data in admissions policies. We rely on family income data in the assignment of financial aid. Where does this

leave us when we discover a rising first year attrition rate that cannot be explained by deficiencies in high school profiles or shortages of student aid? If we accept the view that relevant sociological variables cannot be manipulated and analyzed, we may simply draw a blank on such problems. It is our view, however, that a meaningful statistical analysis of the student population at Knox College in terms of social background, values, and performances is feasible. We foresee that such studies will provide useful approaches to broad classes of students in orientation programs, rather than the improved individual counseling of particular students.

We propose that a pilot study in social stratification at Knox College be carried out by sociology majors during the winter term, 196'-68. Selected students enrolled in Social Stratification during that term would be permitted to fulfill their term paper requirement in this way.

PURPOSE OF THE PILOT STUDY

Before any thorough study of the relationships between social class background and student values and performances can be made at Knox College, the validity and reliability of the measuring instruments to be used must be confirmed. The primary purpose of this pilot study will be to investigate the feasibility of using certain known methods of classification (described below) at Knox College. We hope either to verify the appropriateness of using these classifications here or to discover the ways in which the classifications must be modified for our use.

This try-out study will also have considerable heuristic value in suggesting hypotheses regarding the relationships between social class and

student values and performances which could be tested in the major study which we hope to have funded within the next year. As a result the later study whould achieve greater validity and reliability.

A final purpose of the pilot study will be to provide information on the development of an empirical research orientation in students who have little or no opportunity to participate in such studies. We need to find ways of demonstrating the relevance of theory to method and the nature of the problems of validity, reliability and statistical inference.

THE VARIABLES

The principal variables involved are social class position, values and certain measures of performance. The measurement of social class will be based on a method developed by Ellis, et. al. reported in the American Sociological Review and intended for use for college populations. This "index of class position" uses occupation of father (following Hollingshead's Two Factor Index of Social Position) and self placement. This will provide a five class scale.

Value positions will be similar to a typology of values in social systems developed by Parsons. The basic categories will be (1) social relationship orientation, (2) self discovery, (3) goal achievement, and (4) adaptation. Value scales will be developed for these categories following the method of the Allport-Vernon Scale. This method uses a number of questions to which alternative answers are provided. Using a test of internal consistency, items can be ranked by their "diagnostic efficiency". Those least efficient can be dropped.

Measures of performance have been developed taking into consideration (1) participation in student organizations--including fraternities and sororities, (2) leadership positions in these organizations, and (3) grade point averages.

POPULATION

Data will be collected on those students in the current senior class. The major study which will grow out of this research will consider attrition, graduate school appointments, etc. Such considerations are outside the scope of the proposed pilot study.

PROCEDURE

The project will be carried out by students enrolled in Social Stratification, during the 1967-68 winter term. Several items in the plan will be deliberately left open to permit student participation in the planning. Students will be given training in questionnaire preparation, value scale validation procedures, and specific forms of statistical analysis, particularly, chi square. The questionnaire used by the students in the research project will be largely finalized before the winter term begins through tryout in independent study projects supervised by the project director. It is understood that the Knox College Office of Institutional Research will be available for consultation and assistance in the execution of this project.

The sample of students to be used in the study will be selected randomly from an alphabetical list provided by the Director of Data Processing.

The coding, assimilation and analysis of the data will be a group project, but each student will write an independent report of the project detailing the procedures and interpreting the results.

According to the research plan the outcome of the project will be three chi square contingency tables: (1) a twenty cell table testing the independence of social class and value orientations--provided by the five columns of social classes and four rows of value orientations; (2) a table testing the independence of class and participation in student organizations; and (3) a table testing the independence of social class and leadership. If the latter two tests indicate that classification of student participation and leadership by social class is meaningful rank correlations will be estimated.

FINAL REPORT

Some attempt will be made to judge the efficacy of teaching research methods in such a project through spring term discussions of the director and individual students and by objective questions put to seniors on the comprehensive examination.

The project director will organize a detailed report on the results of this pilot project, indicating the modifications which must be made before carrying out the major study.

GRANT NUMBER II

Final Report on Pilot Project on Value and Stratification at Knox College

by

Henry P. Houser

This pilot project had two principal purposes. One was to introduce undergraduate students to the problems of translating curiosity into methods of gathering, organizing and interpreting data. The other was to investigate some factors associated with performances of college students. The latter was conceived as preparatory to applying for a grant for a more intensive study of certain factors in a broader population. Both purposes served well as guides in the conduct of the project, but the precise ways in which it was originally thought these purposes would be carried out had to be considerably modified. Nonetheless, I would say that on both counts the project could be regarded on the plus side.

The first purpose was included as part of the course plan in the teaching of the course in social stratification (Soc.306) during the winter term. All students enrolled in the course were required to write a term paper and were given the option of working with the instructor on the proposed research as a basis for writing their paper. About half the class (14 students) elected this option. This was a larger group than had been expected and was, I think, larger than optimal for the purpose at hand, which would better have been carried out in a group small enough for more active discussion. The teaching exercise with regard to the

problems of translating questions into data gathering procedures was thus considerably less intensive than had been hoped.

The research group met as a group for about 25% of the regularly scheduled class meetings. This necessarily occurred at the beginning of the term during which time other students in the course were encouraged to work on their own term papers. My surmise, however is that this constituted largely wasted time for these other students. Moreover, the way in which this time with the research group fitted into the general plan of the course left something to be desired. Topically, the work of the research group was often considerably out of phase with what was transpiring in meetings of the entire class. It must have led to some rather disjunctive experiences.

Members of the research group were encouraged to concentrate their interest in the association of social class with some aspect of student life or student performances. Bibliographies had been prepared in several areas such as academic performance, student activism, admissions, graduation and participation in extra-curricular activities. The early meetings of the research group heard oral reports of these readings and discussed factors to take into account in planning its own questionnaire. The next problem was completing the questionnaire by framing the kind of items which would answer the questions which had been asked. This was perhaps the most valuable part of the entire exercise from a teaching point of view. Students had to think ahead to whether data elicited by a given item on a questionnaire would answer the question in mind. The mechanical processes of prepar-

ing the questionnaire, selecting a sample, distributing the questionnaire and beginning the tabulation so that the computer could finish the job were all done as a group project and were marked by good spirit and enthusiasm. Tables relating variables were prepared through the good services of the Computer Center. Each student was provided with a complete set of tables and wrote his paper as an independent project.

In concept, the project seems valuable. It required bringing together concept and data, the data being drawn from their own social environment, and it allowed a degree of independence in interpretation and selection of a sub-area for special attention while affording cooperation in the mechanical data-gathering task. The project could be improved by centering the entire course around the research project, and by working more intensively with smaller groups.

In connection with the second purpose of the project, the most important finding to emerge is the significance of a student orientational factor, called student sub-cultures in the literature, in predicting a variety of behavioral outcomes in college life. In the sociological literature there has been renewed interest in the student and his orientation as independent factors in campus life. The student has passed from being viewed as a passive recipient of the publicly stated goals of the institution to a person who may accept or reject them. Acceptance of the values of the institution is only one possible outcome. It becomes important to know therefore in what aspects the student accepts these goals and purposes and values and in what as-

pects he rejects them and what become the consequences of acceptance or rejection. Finally, there is the question of the factors which are related to his acceptance or rejection; what are their causes as well as their consequences.

A number of measures of student orientation were put into the survey questionnaire, not all of them fully evaluated yet. Principally there is Clark and Trow's typology of student subcultures, vocational, non-conformist, academic and collegiate fun. This is a useful typology because it is a statement of the meaning of the college experience to the student while at the same time relatable to the values of the institution itself. Another measure built into the questionnaire is the Bolton and Kammeyer typology of student role orientations which they label conventional, academic, privatist and vocational. On the basis of work done so far, it appears that this latter measure is not only more cumbersome to use, but gives quite different results and is much less predictive. Further work must be done however to substantiate that claim. There is also a measure of anomie, a condition of normlessness or disenchantment which has shed some interesting light on college life and also the Vernon-Allport scale of personal values which has not yet been fully evaluated. The principal interest in this report will center on the evaluation of the Clark and Trow sub-culture typology both in terms of its consequences and its precursors.

The ease in deriving the classification of individuals is indicated by the simplicity of checking one of four paragraphs. There ~~was~~, however eight individuals who failed to check any of

them. This was due presumably to a difficulty in deciding. The typology is the result of the combinations and permutations of two dichotomized dimensions. The one is interest in ideas and the other is identification with the college. Individuals high on ideas and on college identification are labelled academic; those high on ideas and low on identification are non-conformist; those low on ideas and high on identification are collegiate fun lovers; those low on ideas and low on identification are vocationals. When these types are tabulated by measures of academic performance, student activism, major field and participation in extracurricular activities, there is a clear association.

There were two measures of academic performance which respondents reported about themselves, the number of terms on the Dean's list and the number of terms on unsatisfactory academic status. Tables 1 and 2 show the number of individuals belonging in each category plus the average number of terms by sub-culture orientation. It will be noted that the rank order of sub-culture orientations is the same in both measures of academic performance except that the non-conformists have more terms on unsatisfactory status than the academically oriented. Moreover, the two orientations which are high on interest in ideas stand higher on academic performance.

There were three kinds of student activism asked about: 1) activities in the area of broad social issues; 2) campus issues; and 3) humanitarian concerns. Table 3 cross tabulates activism in the three areas by sub-culture. It is clear that non-conformists, in keeping with the non-campus orientation are the considerably more active group. There is least association between sub-cultures

and activism in campus issues. It is interesting however that the academically oriented are proportionately overrepresented and the collegiate fun group underrepresented. The fun group are apparently not issue oriented and one would expect their campus participation to be proportionately greater in purely social organizations. Humanitarian concerns are more likely types of activism for Knox seniors since participation is higher here in all subcultures than in any other type of activism except for the nonconformists who participate no more in this type of activity than in broad social issues. Still the non-conformists are more active here than the others and this ties in with an off-campus orientation.

Major fields were combined into three categories; humanities, natural sciences and social sciences. Table 4 relates the choice of major to the sub-culture orientation. Given the marginal totals, the vocational are distributed about as expected, the nonconformists are highly overly represented in the humanities, the academically oriented are slightly overly represented in the natural sciences and underrepresented in the humanities and the fun oriented are over represented in the social sciences.

Table 4 is significant in light of the following question: How is it possible to show that the variable called sub-culture orientation is really an independent one exercising causal influence on academic performance, student activism and other behavioral outcomes rather than it being the other way around? One could argue, for example, that one is a high performer and then comes to say he values grades; one is an activist and comes to say he values off-campus participation in issues or humanitarian

work. In keeping with this argument, one might point out that the paragraphs which respondents checked indicating sub-culture contained references to trying to maintain a high grade point average and interest in joining certain kinds of organizations rather than others, or not much interest in joining organizations. In light of this argument it is interesting that there is nothing in the paragraphs relating to fields of knowledge or major fields and still these sub-cultures are relevant to choice of major field. There would appear to be no reason to believe that the disciplines represented are themselves intrinsically of such a nature as to produce people with these orientations or that the faculty in these departments influences people in their orientations in these directions. It is more likely that students bring these orientations with them or a predisposition to these orientations which is then brought out by their experience in the college setting.

Another behaviorial area with which sub-culture was related was memberships in organizations. This was computed on the basis of the number of organization-years he had as a member of all campus organizations that are formally recognized. Table 5 gives the results. The surprise here is that the vocationally oriented have been so active in extra-curricular activities. The reason for this may be enlightened by typifying the kinds of organizations which each type belongs to. Data is available to do this with, but it has not been analyzed yet. The relatively low participation by the non-conformist is in keeping with his general outlook, as is the high participation by academic and collegiate fun types. The same general pattern is revealed in looking at fraternity and sorority membership in Table 6. Non-conformists are

rarely members and again surprisingly the vocational are most frequently members followed by the fun lovers and the academic types.

Having shown that sub-culture orientation is an important factor in certain behavioral outcomes at college, it becomes necessary to analyze certain factors which may affect this orientation. The important variables here are social class, cosmopolitan vs. non-cosmopolitan origin, religion, and anomie.

Table 7 indicates that social class is associated with academic orientation directly and with non-conformist orientation inversely. There is a lesser association with the vocational orientation but it is in the predicted direction so the lower the social class the more likely the vocational orientation. The collegiate fun orientation shows even less association with social class and is contrary to the predicted direction, slightly greater as one goes down the class scale. The generally surprising thing about these findings however is not so much the direction of association as the degree of association between lower social class background and non-conformist orientation and higher class background and non-conformist orientation and higher class background and academic orientation. The class factor is surely an important one to keep in mind in understanding the two largest orientation groups in the senior class.

Table 8 shows the relationship between place of residence and sub-culture orientation with place of residence dichotomized between metropolitan versus non-metropolitan origin. The classification was based on census bureau designations of Standard Metropolitan Statistical Areas (SMSA's). This reveals that non-

conformists are drawn disproportionately from metropolitan areas and that those from non-metropolitan areas are considerably more likely to be vocationally oriented.

Table 9 shows the relationship between religion and subculture. The senior class is overwhelmingly Protestant in identification while the next most numerous group (17%) are those who check no religion as being theirs, indicating they are "other" or "none". The interesting association is between the rejection of traditional religious labels and the non-conformist orientation. Protestants are proportionately more drawn to the vocational orientation and Catholics to the collegiate fun orientation while Jews are exculsively represented, though their numbers are small for generalization, from the two orientations interested in ideas.

A final variable to which is attached considerable ambiguity as to its independence or dependence is anomie (or normlessness or disenchantment). Anomie was measured by the five item Srole scale and the results are shown in Table 10. The association here is largely as one would predict particularly with reference to the academic type being lowest in anomie since he is, apparently, most deeply acceptant and participant in the college situation. The non-conformists are presumably most acceptant of the intellectual function of the college and find a sense of worthwhileness there which would keep their anomie scores down. It might be hypothesized that those non-conformists who are also the activists would be lower on anomie scores while the non-activist non-conformists would have a higher anomie score. Data is available to test this hypothesis. The collegiate fun and vocationally oriented are the highest on anomie. It is a ques-

tion whether anomie is a consequence of being in a social environment which is rather out of sympathy with their particular interests and purposes or whether they were anomic upon entry into the college and drifted into points of view which either offered escape (collegiate fun) or a more direct answer to their confusion (vocationalism). Thus, anomie may be thought of as the property of the person or a consequence of the social situation; it is unclear in the present context which of the two views is relevant.

It has already been shown that sub-culture has an effect on two measures of academic performance. It is probable that anomie makes an independent contribution to academic performance. Tables 11 and 12 indicate this. Anomie score varies directly with the average number of terms on unsatisfactory status and inversely with average number of terms on the dean's list. The complex of factors represented by social class, student subculture and anomie need further analysis and refinement, but it is clear that they are all related to significant measures of student performance.

There is one further factor that emerged as significant in this study. The questionnaire asked students to indicate whether a parent or one or more of their grandparents was an immigrant to this country. Slightly over half of the respondents indicated that this was the case. It is clear that most of these came from the Chicago metropolitan area and that in fact over two-thirds of the students from the Chicago SMSA were in this category. The bulk of the remainder came from other SMSA's with

smaller towns contributing relatively few. This immigrant background is predictive on several counts. While it contributes little to the analysis of student cultures except that those with immigrant backgrounds are less likely to be nonconformist, it is related to academic performance and to anomie. Tables 13, 14, 15, and 16 bear this out.

It is also interesting that those with an immigrant background are marked by greater likelihood of upward mobility aspiration. An item on the questionnaire asked whether the student would like to achieve a level of living better, about as well, or not as well as his parents. Immigrant background is associated with a greater frequency of high aspiration.

While this survey reveals some possibly useful and certainly interesting information about the senior class at Knox College, it was intended as a pilot study of some variables that could be carried into a variety of collegiate situations. The relationship found at a small midwestern liberal arts college between sub-culture and anomie, or sub-culture and social class may or may not hold up among seniors at a large urban university such as The University of Chicago or at a large state college such as Western Illinois. A larger study would make it possible to control for type of institution.

The larger study will be recast, refined and focused to deal with the problem of the individuals meaningful relationship with his environment in the social setting of higher education. There emerge from this study three principal themes to work with. Individuals in college are interested and alive in their social setting when they are oriented both to ideas

and social relationships in the college setting; that is when they are academically oriented. There are alternatively individuals who are more activist oriented, less acceptant of their social environment and more interested in change and as long as they are interested in ideas, in the intellectual function of the college, they too are bouyant and eager participants in society, albeit in a critical way. Finally there is a group, who even though they apparently participate deeply in college social life and extra-curricular activities are not meaningfully related to that environment.

The dependent variable in the larger study then would be a measure of anomie, disenchantment or alienation. By studying a number of different types of institutions an approach could be made to determining the extent to which disengagement or anomie was related to immediate social setting, to general background factors, such as social class or immigrant status and religion, or to more personal factors which cut across situational and status categories.

Table 1

Dean's List Status by Sub-Culture

Dean's List Status	Sub-Culture: Vocational		Non-Conformist		Academic		Fun		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Never on	11	91.7	11	52.4	23	67.6	9	90	54	70
Ever on	1	8.3	10	47.6	11	32.4	1	10	23	30
Total	12	100	21	100	34	100	10	100	77	100
Average number of terms on	.083		1.190		.676		.100		.649	

486

Table 2

Experience with Unsatisfactory Status by Sub-Culture

Experience with Unsatisfactory Status	Sub-Culture									
	Vocational		Non-Conformist		Academic		Fun		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Never on	6	50	14	66.7	32	94.1	3	30	55	71.4
Ever on	6	50	7	33.3	2	5.9	7	70	22	28.6
Total	12	100	21	100	34	100	10	100	77	100
Average number of terms on	.917		.476		.088		1.60		.519	

9847

Table 3

Type of Student Activism by Sub-Culture

Active in Social Issues	Vocational	Non-Conformist	Sub-Culture Academic	Fun	Total
Yes	1	12	4	2	19
No	11	9	30	8	58
Active in Campus Issues					
Yes	3	6	12	1	22
No	9	15	22	9	55
Active in Humanitarian Concerns					
Yes	5	12	14	3	34
No	7	9	20	7	43

Table 4

Area of Major by Sub-Culture

Area of Major	Sub-Culture: Vocational		Non-Conformist		Academic		Fun		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Humanities	3	27.3	11	52.4	7	20	1	10	22	28.9
Natural Science	2	18.2	4	19.0	10	30	2	20	18	23.8
Social Studies	6	54.5	6	28.6	17	50	7	70	36	47.3
Total	11	100	21	100	34	100	10	100	76	100

Table 5

Extracurricular Participation by Sub-Culture

	Sub-Culture			
	Vocational	Non-Conformist	Academic	Fun
Average number of organization Membership-years	13.75	7.00	13.35	11.70

Table 6

Greek Organization Membership by Sub-Culture

	Sub-Culture				
Greek Member as a Senior	Vocational	Non-Conformist	Academic	Fun	Total
Yes	9	2	23	7	41
No	2	20	9	3	34
Total	11	22	32	10	75

4489

Table 7

Sub-Culture by Social Class Background

Sub-Culture	Social Class							
	I		II		III		IV & V	
	No.	%	No.	%	No.	%	No.	%
Vocational	3	11.1	2	12.5	4	20.0	2	16.6
Non-Conformist	6	22.2	1	6.3	7	35.0	6	50.2
Academic	15	55.6	11	68.7	6	30.0	2	16.6
Fun	3	11.1	2	12.5	3	15.0	2	16.6
Total	27	100.0	16	100.0	20	100.0	12	100.0

Table 8

Sub-Cultures by Metropolitan
versus
Non-Metropolitan Origins

Sub-Cultures	Metropolitan		Non-Metropolitan	
	No.	%	No.	%
Vocational	5	8.1	5	33.3
Non-Conformist	21	33.9	1	6.7
Academic	29	46.7	7	46.7
Fun	7	11.3	2	13.3
Total	62	100.0	15	100.0

Table 9

Sub-Culture by Religion

Sub-Culture	Religion							
	Jewish		Protestant		Catholic		Other or None	
	No.	%	No.	%	No.	%	No.	%
Vocational	0	0	9	18	1	8	2	14
Non-Conformist	1	25	9	18	1	8	11	79
Academic	3	75	25	49	7	60	1	7
Fun	0	0	8	16	3	25	0	0
Total	4	100	51	101	12	101	14	100

Table 10

Sub-Culture by Anomie

Anomie	Sub-Culture: Vocational No.	Vocational %	Non-Conformist No.	Non-Conformist %	Academic No.	Academic %	Fun No.	Fun %
Low	6	50	11.	52	22	65	1	10
Medium	3	25	8	38	8	24	8	80
High	3	25	2	10	4	11	1	10
Total	12	100	21	100	34	100	10	100
Average	7.16		6.24		5.29		6.90	

Table 11

Number of Terms on the Dean's List by Anomie

Terms on Dean's List	Anomie: Low	Medium	High
0	26	23	9
1-7	18	7	2
Average number of Terms	.95	.47	.18

Table 12

Experience With Unsatisfactory Status by Anomie

Ever on Unsatisfactory Status	Anomie: Low	Medium	High
No	37	19	6
Yes	7	11	5
Average number of Terms	.23	.73	.64

Table 13

Sub-Culture by whether or not
one parent or grandparent was an immigrant

Sub-Culture	Immigrant Status			
	No		Yes	
	No.	%	No.	%
Vocational	5	13.5	6	15.8
Non-Conformist	12	32.4	9	23.7
Academic	16	43.2	18	47.4
Fun	4	10.9	5	13.1
Total	37	100.0	38	100.0

Table 14

Dean's List Status by whether or not a parent or grandparent was an immigrant

Dean's List Status	Immigrant Status	
	No	Yes
Ever on	12	14
Never on	28	29
Average number of terms on	.50	1.86

496

Table 15

Experience on Unsatisfactory ~~experience~~ status by whether or not a parent or grandparent was an immigrant

Experience on Unsatisfactory Status	Immigrant Status	
	No	Yes
Ever on	12	9
Never on	28	34
Average number of terms on	.65	1.28

Table 16

Anomie by whether or not a parent or grandparent was an immigrant

Anomie	Immigrant Status	
	No	Yes
Low	19	24
Medium	13	16
High	8	3
Average score	6.4	5.7

SOCIOLOGY
Feb. 1968

PART I

1. A good deal has been written lately about the activities of college students in humanitarian projects and social and campus issues. These activities include volunteering for work with disadvantaged people as well as demonstrating, circulating petitions, calling together meetings or participating in read-ins. Have you participated in any such voluntary group actions either on or off the campus since you have been a college student?

If so check the relevant category or categories below and indicate briefly the activity and the issue in the space after the appropriate item or items.

____ a. broad social issues (such as race, housing, war, the draft)
Specify issue(s) _____

Specify nature of action(s) _____

____ b. campus issues (such as women's hours, automobile regulations, and open dorms)
Specify issue(s) _____

Specify nature of action(s) _____

____ c. humanitarian concerns (such as tutoring deprived children, working as a volunteer in a mental hospital or home for the aged, recreation work for low income children, etc.)

Specify type of volunteer work _____

2. Are you now or have you been since you were in college a member of any off-campus organization in Galesburg?

____ YES ____ NO

If "yes" was it (check relevant item or items and give the name of the organization or organizations.)

____ religious
Name _____

____ political
Name _____

____ recreational
Name _____

____ character building such as scouting
Name _____

____ other
Name _____

PART I (continued)

3. Do you consider yourself more likely to vote Republican or Democratic in national elections?

____Republican
____Democratic
____Other (Please specify)

4. What occupation do you plan at this time to go into?

_____

5. How certain are you that this plan will be carried out?

____Quite certain
____Not really sure
____Quite uncertain

6. What alternative occupations might you consider?

_____

7. How much education do you plan at this time?

____Graduate from college
____One or more years of graduate or professional school

If professional school, state profession _____.

8. Compared to your parents, do you expect (or expect your husband) to provide an economic level of living which is:

____Higher
____Lower
____About the same

9. If you checked "higher", how much difference would it make to you if your expectations were not met?

____a lot of difference
____some difference
____little or no difference

10. Have you ever been on the dean's list at Knox? ____YES ____NO

If yes, how many terms or semesters? _____

PART I (continued)

11. Have you ever been on unsatisfactory academic status at Knox? ___YES ___NO

If yes, how many terms or semesters? _____

12. About how many episodes of physical illness, not including accidents, have you had each year during the school year at college? Think of an episode of illness as a major or minor illness which interfered with your regular routine and kept you from performing your regular curricular or extra-curricular tasks whether or not you sought medical help.

_____An average of more than 7 a year.
_____An average of 3 to 7 a year.
_____An average of 1 to 3 a year.
_____practically none.

13. Have you had any mental or emotional upsets since being a college student for which you sought professional advice either on the campus or off?

_____YES _____NO

PART II

Check the one paragraph which best describes you in your college role.

1. This kind of person is interested in education, but primarily to the point of preparation for his occupational future. He is not particularly interested in the social or purely intellectural phase of campus life, although he might participate in the activities on some limited basis. His primary reason for being in college is to obtain vocational or occupational training.

_____

2. This person is interested in learning about life in general, but in a manner of his own choosing. He is very interested in the world of ideas and books and eagerly seeks out these things. Outside the classroom this person would attend such activities as the lecture-concert series, foreign films, and so forth. From a social point of view, this person tends to reject fraternities, sororities, and the social events that are a part of campus life. When this person does join, it will be one of the political or more academic campus organizations. For the most part, this person would consider himself to be someone who is primarily motivated by intellectual curiousity.

_____

3. This person is concerned with books and the pursuit of knowledge, but is also the kind of person who does not cut himself off from the more social phases of campus life. He is interested in getting good grades and usually tries to maintain a fairly high grade point average. This is the kind of person who feels the social side of college life is not the most important, but is certainly significant for his general development.

_____

4. This person is very concerned with the social phases of college life. He identifies closely with the college, and tries to attend as many of the campus social and athletic events as possible. This person may be interested in intellectual kinds of things, but for the most part, he finds the greater satisfaction in parties, dances, and so forth. His college years are centered about fraternity and sorority activities even though he may not be a member. This person attempts to "make grades," but will rarely go out of his way to do extra or non-assigned reading.

_____

PART III

Check the item after each statement which most closely represents your point of view.

1. A college or university ought to provide vocational training, develop skills and techniques directly applicable to your career.

_____ a. Highly important
_____ b. Medium importance
_____ c. Low importance

PART III (Continued)

2. How likely do you think you would be to attend a discussion on disarmament and a nuclear test ban?

____a. I definitely would attend
____b. I probably would attend
____c. I probably would Not attend
____d. I would not attend

3. How likely do you think you would be to attend a discussion on the status of the Arts in America?

____a. I definitely would attend
____b. I probably would attend
____c. I probably would Not attend
____d. I would not attend

4. How likely do you think you would be to attend a discussion on automation and its effect upon unemployment?

____a. I definitely would attend
____b. I probably would attend
____c. I probably would Not attend
____d. I would not attend

5. Which of the following most closely approximates your ideas about what you want to do in life?

____a. I have known since at least the beginning of high school what I want to do with my life, and I am not likely to change it for anybody.
____b. I can not make up my mind what I want to do in life, but I am looking for something where I can really be successful.
____c. I still don't really know what I want to do in life, but I don't worry about it.
____d. I have settled on a career, and it is the central goal of my life.
____e. I think I know what I want to do in life, but I may change my mind.

6. A college or university ought to develop your knowledge of community and world problems.

____a. Highly important
____b. Medium importance
____c. Low importance

7. The average college student spends too much time on nonacademic activities.

____a. Agree
____b. Agree somewhat
____c. Uncertain
____d. Disagree somewhat
____e. Disagree

PART III (continued)

8. It is all right to choose some college courses because you have friends taking the course.

_____a. Agree
_____b. Agree somewhat
_____c. Uncertain
_____d. Disagree somewhat
_____e. Disagree

9. A college or university ought to develop your ability to get along with different kinds of people.

_____a. Highly important
_____b. Medium importance
_____c. Low importance

10. A college or university ought to prepare you for a happy marriage and family life.

_____a. Highly important
_____b. Medium importance
_____c. Low importance

11. A college or university ought to help develop your moral capacities, ethical standards and values.

_____a. Highly important
_____b. Medium importance
_____c. Low importance

12. Social life on the campus is not important to me.

_____a. Agree
_____b. Agree somewhat
_____c. Uncertain
_____d. Disagree somewhat
_____e. Disagree

13. The most important aspect of college life is the learning of social poise.

_____a. Agree
_____b. Agree somewhat
_____c. Uncertain
_____d. Disagree somewhat
_____e. Disagree

14. How likely do you think you would be to attend a discussion on proper dating behavior for the undergraduate?

_____a. I definitely would attend
_____b. I probably would attend
_____c. I probably would Not attend
_____d. I would not attend

15. How likely do you think you would be to attend a discussion on the relationships between college students and their parents?

_____a. I definitely would attend
_____b. I probably would attend
_____c. I probably would Not attend
_____d. I would not attend

PART IV

Below are some statements with which some people agree and others disagree. Please give us your own opinions about these items, i.e., whether you agree or disagree with the items as they stand.
Check the appropriate blank for each.

1. There is little use writing to public officials because often they aren't really interested in the problems of the average man.
   _____ Strongly agree
   _____ Agree
   _____ Uncertain
   _____ Disagree
   _____ Disagree strongly

2. Nowadays a person has to live pretty much for today and let tomorrow take care of itself.
   _____ Strongly agree
   _____ Agree
   _____ Uncertain
   _____ Disagree
   _____ Disagree strongly

3. In spite of what some people say, the lot of the average man is getting worse, not better.
   _____ Strongly agree
   _____ Agree
   _____ Uncertain
   _____ Disagree
   _____ Disagree strongly

4. It is hardly fair to bring children into the world with the way things look for the future.
   _____ Strongly agree
   _____ Agree
   _____ Uncertain
   _____ Disagree
   _____ Disagree strongly

5. These days a person doesn't really know whom he can trust.
   _____ Strongly agree
   _____ Agree
   _____ Uncertain
   _____ Disagree
   _____ Disagree strongly

PART V

Check the answer that expresses your point of view.

1. For the most part, I enjoy being together with friends who come from families at least as nice and successful as my own, rather than being together with just anybody.
_____Agree _____Disagree _____Not sure

2. I have certain standards which my friends must meet.
_____Agree _____Disagree _____Not sure

3. Young people have to be careful about the behavior of the crowd they go with.
_____Agree _____Disagree _____Not sure

4. Money is made to spend not save.
_____Agree _____Disagree _____Not sure

5. Nowadays with the world conditions the way they are, the wise person lives for today and lets tomorrow take care of itself.
_____Agree _____Disagree _____Not sure

6. The money I save gives me at least as good a feeling as things I buy.
_____Agree _____Disagree _____Not sure

7. I think the ideal age for a boy to marry is:
_____Age 18-21
_____Age 22-24
_____Age 25-29
_____Age 30 or over

8. Girls would rather go out with boys who do not try to make love or who wait until they have been going steady for at least a month.
_____Yes _____No _____Not sure

9. People usually fear going too far while out on a date.
_____Yes _____No _____Not sure

10. A boy has as much responsibility as a girl in seeing that necking does not go too far.
_____Agree _____Disagree _____Not sure

PART VI

The following list contains some of the campus organizations to which a student might belong. Find those in which you are, or have been, a member.

a. If you were at any time in college, or are now, a participating member of any of them, circle the appropriate letters (F, freshman; S, sophomore; J, junior; S, senior) corresponding to your years of membership.

b. If you were, or are now, an officer, chairman, captain, or manager, place a check mark on the line provided.

F S J S	Activities Board
F S J S	Advisors
F S J S	American Field Service
	ATHLETICS
F S J S	Baseball
F S J S	Basketball
F S J S	Football
F S J S	Golf
F S J S	I-M's
F S J S	Soccer
F S J S	Swimming
F S J S	Tennis
F S J S	Track
F S J S	Wrestling
F S J S	Band
F S J S	Board of Public Relations
F S J S	Campus Chest
F S J S	Chess Club
F S J S	Choir
F S J S	Christian Science Organization
F S J S	Cinema Club
F S J S	Class Officer
F S J S	College Men's Council
F S J S	College Women's Council
F S J S	Community Action Committee
F S J S	Conservation Club
F S J S	Debate Club
F S J S	Dialogue
F S J S	Dorm council
F S J S	Dorm officer
F S J S	Economic Society
	FRATERNITY
F S J S	Alpha Delta Epsilon
F S J S	Beta Theta Pi
F S J S	Phi Delta Theta
F S J S	Phi Gamma Delta
F S J S	Sigma Nu
F S J S	Tau Kappa Epsilon
F S J S	Folk Dance Club
F S J S	French Club
F S J S	Friars
F S J S	German Club

PART VI (continued)

F	S	J	S	Gale
F	S	J	S	History Club
F	S	J	S	Honor Board
F	S	J	S	Inter-Fraternity Council
F	S	J	S	K Club
F	S	J	S	Knox Players
F	S	J	S	Mortar Board
F	S	J	S	Newman Club
F	S	J	S	Orchestra
F	S	J	S	Peace Corps Support Group
F	S	J	S	Pi Sigma Alpha
F	S	J	S	Puddler
F	S	J	S	Rifle Club
F	S	J	S	Sigma Alpha Iota
F	S	J	S	Siwasher
				SORORITY
F	S	J	S	Alpha Xi Delta
F	S	J	S	Delta Delta Delta
F	S	J	S	Phi Mu
F	S	J	S	Pi Beta Phi
F	S	J	S	Spanish Club
F	S	J	S	Student
F	S	J	S	Student Senate
F	S	J	S	Students for Peace
F	S	J	S	United Campus Christian Fellowship
F	S	J	S	Westminster Club
F	S	J	S	WVKC
F	S	J	S	Young Democrats
F	S	J	S	Young Republicans
F	S	J	S	YWCA

If you have been, or are now, a member of an organization not included in the list below above, add them in the following spaces provided.

F	S	J	S	_____
F	S	J	S	_____
F	S	J	S	_____
F	S	J	S	_____

PART VII

1. Name in detail the occupation of your father, even if deceased, retired, or divorced. Along with occupational title give industry of employment.

If occupation is owner of a business or farm, state approximate market value if known to you. If not, state approximate number of employees. If occupation is contractor, state the average number of employees.

If occupation is in the professional military, give rank. If government official, give title of position, agency of employment, and state whether local, state, or national. Be as specific as possible.

2. Education of father. (Check appropriate category)

_____a. Less than seven years of school.
_____b. Completed 7th, 8th, or 9th grade.
_____c. Partial high school.
_____d. High school graduate.
_____e. Partial college.
_____f. Completed college or university.
_____g. Completed graduate or professional training.

3. An American social scientist has made a study of the United States which indicated that in this country there are four major social classes: the middle, the lower, the working, and the upper social classes. In which of these social classes would you say that your family belongs?

_____a. Middle
_____b. Lower
_____c. Working
_____d. Upper

PART VII (continued)

If you checked middle above, would you say your family belongs to the upper-middle, middle-middle, or lower-middle social class?

_____a. Upper-middle
_____b. Middle-middle
_____c. Lower-middle

4. If you are a transfer student how many years have you had at Knox? (Circle years here)

1 2 3 4

5. Religion:

_____Catholic
_____Protestant
_____Jewish
_____Other

6. Give the your home town, county, and state.

town _____
county _____
State _____

7. Sex: _____MALE _____FEMALE

8. Major field _____

9. Were one or more of the following relatives immigrants into the United States?

_____parent

_____grandparent

10. Are you getting scholarships or loan aid? _____YES _____NO

If "yes"
_____Scholarship _____Loan

GRANT NUMBER III

THE EFFECTIVENESS OF COMPUTER-AUGMENTED INSTRUCTION IN THE LABORATORY SESSIONS OF AN INTRODUCTORY COURSE IN THE PRINCIPLES OF ACCOUNTING

A Proposal for a Seed Grant to Support a Pilot Study

Submitted by

Dr. Wilbur F. Pillsbury

Professor of Economics

Knox College

The Problem

The recent introduction of the computer into the instructional program has, in some cases revolutionized the methods of teaching particular subjects. Most notable have been the experiments with computer-assisted instruction (CAI) at the elementary grade level, and, more recently, in college level subjects. In these programs with CAI the computer is used as a teaching machine under the concept of a self-instructional program. Thus the computer simulates a tutor by performing the functions of presenting material, examining the learner, and providing corrective instruction or advancement to new information based on the learner's performance. While the computer is used, the concepts, principles and programming operations of the computer are not learned by the student.

Under computer-augmented instruction, on the other hand, the computer is used to supplement and complement the regular teaching process. Also under augmented instruction, the student is taught the fundamentals and methods of programming for the computer. Thus, computer augmented instruction is not a substitute for existing forms of teaching, but it may point the way toward raising the quality and vitality of the educational process.

There are schools of thought opposed to both of these types of instruction and many controversial issues have arisen in recent years. However, there is no concrete evidence as to the worthwhileness of using the computer particularly under the augmented instructional concept.

It is generally believed that the computer may be profitably used when: there are clearly defined educational needs, when the way it is used has been planned so that it can meet these needs, and when the use makes an original contribution and is used imaginatively. All of these elements are essential to assure success

in the educational use of the computer. It will make the difference between a wasteful use of an expensive new tool and an efficient and economical employment of this new resource of education. Much thought and time, therefore, will have to be devoted to all these aspects of utilization.

The Economics Department at Knox College should take advantage of using the computer to augment its instructional program. It is believed that this use may not only provide the knowledge of a valuable tool to the students but will result in revising and updating the curriculum and cause some serious re-evaluation of how learning takes place as the instructor strives to find better ways of teaching. After all, what instructor can, under computer-augmented instruction, confine his teaching to lecturing from notes taken ten, or even five, years ago. Furthermore, such a supplement to teaching is forced to go far beyond lecturing on the text already assigned.

The Purpose of the Pilot Study

In an experiment with computer-augmented instruction, it is important to test its effectiveness. Therefore, it is proposed that there be a restructuring of the lesson content in the Laboratory Sessions of the introductory course in the principles of Accounting. Forty-five students will meet with the instructor twice a week for lecture and discussion. At the beginning of the year the group will be randomly divided into three groups of 15 students. Each of the smaller groups will meet in Laboratory Sessions with the regular instructor once each week. Variations in the amount and use of computer-augmented instruction will take place within these groups: Group A, 10% computer augmented instruction; Group B, 50% computer augmented instruction; Group C, 90% computer-augmented instruction. In each case

the remaining percentage will be the historically assigned hand-calculated problems.

The pilot study will involve the preparation of computer programs to be used in the computer-augmented instruction and in the construction of uniform examinations to be administered to the large group.

GRANT NUMBER III

FINAL REPORT

COMPUTER AUGMENTED ACCOUNTING EDUCATION AT KNOX COLLEGE

Dr. Wilbur F. Pillsbury

GRANT NUMBER III

FINAL REPORT

COMPUTER AUGMENTED ACCOUNTING EDUCATION AT KNOX COLLEGE

Dr. Wilbur F. Pillsbury

FINAL REPORT

COMPUTER AUGMENTED ACCOUNTING EDUCATION

AT KNOX COLLEGE

In the past few years the computer has become an important tool in education, not only in the administrative tasks but as an aid to the instructional process itself. My remarks today will be confined to our experiences in offering a course entitled, "Computer Augmented Accounting Education."

You are all familiar, I am sure, with Computer Assisted Instruction in which the computer is programmed to present information to the student, ask questions, evaluate answers and adapt the instructional process to the student's individual needs. This use of the computer, which has been adopted from grade school through college, requires a great deal of sophisticated equipment and programs. Thus far, this type of teaching is not within the reach of many of us.

However, Computer Augmented Instruction, I suggest, is available to most of us.

My remarks today are divided into five parts:

- What Knox is doing in Computer Augmented Accounting Education
- Why Computer Augmented Accounting
- Research involved
- Results thus far
- Suggestions to consider

WHAT KNOX IS DOING IN COMPUTER AUGMENTED ACCOUNTING EDUCATION

At Knox College the Principles of Accounting course is a one year, three term course offered to students majoring in economics and business administration and to other students within the liberal arts program. The content of the first two terms resemble the typical beginning accounting offered at most colleges and universities. But at Knox the teaching process has been altered by means of using the computer as a teaching tool.

I have written some 80 programs which have been stored on the disk of an IBM 1130 computer. These programs can be called by the student to

journalize, post, prepare trial balances, financial statements and their accompanying analyses. In addition, programs are available which deal with managerial accounting, actuarial science, inventory analysis, capital budgeting, and the accounting decision making process.

The student uses his creative thinking to enter data on key-punched cards. The computer then takes over for the time consuming and tedious computation which usually involves no learning whatsoever. During the first two academic terms the computer is used as a tool to more effectively teach accounting. Discounting the time and drudgery saving, which, by the way are tremendous, the student, without understanding computer programming, already can comprehend the powerful uses of this new tool at his command.

In these first two terms the students are given typical accounting problems for which they key-punch the raw data on cards. If the student is weak in a particular phase of the course, he is urged to do other problems, make up his own data, indeed, create his own complete practice set, using the variables which have been programmed and stored on the computer disk. The possibilities are limited only by the student's interest, time and imagination.

During the third term, the positions are reversed; that is, the accounting process and the problems are used as a means of teaching computer programming. It is in this term that the student learns how to use the computer by means of a user oriented language, FORTRAN. In both of these methods the learning process is constantly reinforced.

During these three terms all of the recommendations regarding the computer and the accounting student set forth by the American Accounting Association and the American Institute of Certified Public Accountants are fulfilled. As you know, both of these organizations, in strongly worded statements, insisted that the accounting student today must be involved with the computer. I could not be more in agreement.

WHY COMPUTER AUGMENTED ACCOUNTING

There are three objectives to the program:

- To use the computer as a tool to better understand the material being studied
- To make the students intelligent users of available computer facilities

- To spare the students the drudgery and inordinate amount of time involved in journalizing, posting, shuffling papers and calculating columns, rows and "tons" of figures. There is not much learning which takes place in these time-consuming activities; the time is better spent on analytical and creative thinking.

Once the goals had been set, I struggled with the questions: Do I teach computer programming first and the accounting course afterwards? Or do I teach the course material with the aid of the computer and computer programming after that?

I settled on the latter method believing there is more logic to this approach. One need only look at the current methods of teaching a foreign language. Students learn to speak the language first via language laboratories; then grammar and sentence structure come more easily. The use first, details later approach is efficient and faster. Or, look at our own discipline where the so-called "Principles" chapter comes only after the students learn the procedures, rules and methods.

Furthermore, it was possible that if the students learned programming first they would be thinking of programming instead of the accounting course content. Therefore, I selected the method whereby the students learn the course material on the computer and then program writing the third term.

RESEARCH INVOLVED

For a man over 30, I had best begin this section with a personal confession. One year ago last September my knowledge of computers was nearly zero. Knox College had just installed an IBM 1130 computer to be used for educational purposes. I am one of those faculty who has been forced, urged, shown the wisdom of and haggled into using the computer. I would have been made to feel incompetent if I did not. As it was, I just plain "caught the bug." A few of my students wanted to start using the computer to solve some of the problems dealing with financial statement analysis, so it became evident that I had to learn about the computer in order to keep up with them.

So, I took, along with many students, the non-credit course in computer science which was offered to students and faculty. I made mistakes. I sat

there wide-eyed and in wonderment while the students were nodding their heads that they understood what was going on. The students were teaching me--and in some cases they still are. But all of this experience whetted my appetite to see what could be done to bring the computer into our accounting courses. I took a two-term sabbatical, beginning with one month at an IBM education center. I highly recommend this as an excellent educational experience. Following that month at IBM, I spent two months at Stanford University and then visited 10 different schools in the State of California to study their application of the computer to their educational process.

Since my sabbatical I have written some 80 computer programs in the FORTRAN IV language, all of which apply to Computer Augmented Accounting Education.

RESULTS THUS FAR

Starting out with the grandiose idea of making a truly scientific test of my experiment, I planned to have three laboratories of students chosen at random in the Registrar's office:

- One-third of the students were to do 90% of their problems by hand and 10% by computer
- Another third of the students were to do 50% of their problems by hand and 50% by computer
- A final third of the students were to do 10% of their problems by hand and 90% by computer.

With this procedure, and subsequent testing, I proposed to have a more scientific indication of the effect of using the computer. This scientific experimentation soon collapsed. After about one week the students randomly selected to do 90% and the 50% of their work by hand complained bitterly of their extra drudgery and time. "Why do we have to do this extra work?", they objected. "All in the interests of a scientific experiment," I told them. This explanation proved insufficient and soon my experiment collapsed under the weight of student pressure.

At the present time about 70% of the problems are done on the computer. Therefore, it is impossible to give you scientific proof of the worthwhileness

of this method of teaching but only subjective judgments with a few interesting sidelights:

1. I believe I am teaching 25% more accounting material in 25% less time. I am covering much quantitative and analytical material never covered before. Aspects of "managerial accounting" never discussed in previous courses are now being covered.

2. Students are attracted from a variety of major fields--English, art, music, philosophy, biology, education, chemistry, physics, in addition to the usual economics, mathematics, and political science areas.

3. No students failed the first or second term course. As far as I can remember this is a record in some 23 years of teaching. I believe my standards are higher now than at any time in the past. I constantly found myself telling the weak student to use the variables in the programs which were stored on the disk, make up his own problems, and

experiment with various phases of the problem.

In this manner, the computer library programs have all the educational benefits of a "live" laboratory demonstration. The student is allowed to think of, and through, a transaction himself--all with a minimum of supervision. The learning process is thereby reinforced.

4. Fifty-two of the fifty-three students returned for the second term--another record, too, I believe. All of the science and humanities students returned. It is interesting, the only student "lost" was an economics major who switched to philosophy.

5. Using the computer augmented approach has forced me to completely change my teaching procedure. This effect may be the most important one. If you are like me you often enter the classroom with "canned" problems or questions and then start off the discussion by asking, "Well, did you think of this angle?" Usually the students have not and you can assert your superior intellect by

putting a different phase of the problem on the blackboard.

It was a considerable shock to me that this procedure could no longer be used. I have found that as the students were forced to think through their own problems, they, not I, had thought through all of the angles of a problem. The philosophy, art, and music student were asking me, "Well, did you think of it this way?" Frequently, I had not.

SUGGESTIONS TO CONSIDER

It is not my idea to make sophisticated programmers out of the students in my course. I do attempt to make them intelligent users of the computer, knowing when it should be used and when it should not. I also hope to make them understand that there are both advantages and disadvantages to the computer's use.

Users they are becoming. I feel like I am hanging onto their coattails as they are running out ahead of me. Motivated? You bet. So, my suggestion to you is to not get into this type of teaching unless you are willing to work as probably you have never worked before. Your students are going to force you to make changes and really put a test to some of your "sacred cows" of teaching.

Another suggestion is that I believe we have to start gearing our courses for the coming students who will have used computers in high schools. These students simply are not going to put up with the deadly work of hand written problems or practice sets or pounding the calculator by the hour for ratios for financial analysis.

These students who have been exposed to the computer before they come to us are going to insist that the deadly paper-shuffling and laborious tasks be handled electronically. There will then be time for the analysis, interpretation, and simulation and for truly creative learning to take place.

To those of you who are computer center directors, or those who are departmental chairmen with faculty members whose class notes are yellow with

age, I have a suggestion. Take some of your brighter majors and ask them to do some of their problems or current research on the computer. Ask them to take it to these professors with old class notes to inquire if they can do some of their assignments on the computer. In other words, tease your faculty into "catching the bug."

Lastly, a word to the computer center directors. Don't use any of my experiences and don't let those professors with yellowed-with-age class notes get off course unless you want to tolerate sharing the computer with us graybeards.

April 18, 1969
Speech given before:
Midwest Business Administration Association
Sherman House Hotel
Chicago, Illinois

Wilbur F. Pillsbury
Professor of Economics
Knox College
Galesburg, Illinois

GRANT NUMBER IV

SEED GRANT REQUEST

DEVELOPMENT OF VIDEO TAPES ON WORD RECOGNITION SKILLS, PHONIC AND STRUCTURAL ANALYSIS, USING A MODIFIED LINGUISTIC APPROACH FOR TEACHER EDUCATION IN THE TEACHING OF READING AND RELATED LANGUAGE ARTS

Charles E. Wingo

Monmouth College

January, 1968

DEVELOPMENT OF VIDEO TAPES ON WORD RECOGNITION SKILLS, PHONIC AND STRUCTURAL ANALYSIS, USING A MODIFIED LINGUISTIC APPROACH FOR TEACHER EDUCATION IN THE TEACHING OF READING AND RELATED LANGUAGE ARTS

1. Introduction

The Problem

Literature and experience indicate that the college students who plan to be teachers of reading, particularly in the elementary schools, should be taught phonics, structural analysis, and modified linguistics if they have not had sufficient background in these areas, or are in need of a refresher experience.

The Torch Lighters[1] of Harvard University points out that the first thing the college instructor should do is to give training in these areas. Concerning Word Recognition Skills: "The only problem noted by the instructors in this phase of reading instruction had to do with the college student herself. They found that many students have difficulty with the word attack program because they have either forgotten or never learned the rules of phonetic and structural analysis. Thus these principles must be reviewed by the instructor before he can get down to the business of preparing the student to teach word recognition skills."

The timeliness of a proposal to improve and enhance the effectiveness of the teacher-training program at Monmouth College, Monmouth, Illinois, 61462, for future and in-service teachers of reading is illustrated by an article in "The School Administrator."[2] The draft of the 1968 resolution of the American Association of School Administrators as prepared by the Resolutions Committee, Section I: The School Program--The Scope of the Educational Program, strongly urges that free public and non-public education encompass full and comprehensive programs in early childhood education for basic preparation and early advancement of learning. Educators, government agencies, and the general public are urged by the committee to develop programs suited to the individual needs of all children, including the largest single group of whom are classified as "average."

1. See E, Review of Literature
2. See F, Review of Literature

Over the past several years, the Initiator of this proposal has received an increasing number of requests from college and university students for source materials to be used in the writing of research papers in the areas of sequential phonics, structural analysis in word recognition, and modern linguistics applied to the teaching of reading. The shocking deficiencies in reading in the Chicago and Los Angeles city schools as reported recently in the newspaper media by the School Superintendents of these cities speak strongly for trained teachers in phonics and related linguistics for the teaching of reading. These superintendents have started a crash program involving many personnel to overcome the deficiencies in reading.

The Initiator of this proposal has utilized the Code-Alphabet-Meaning-Emphasis (hereafter designated as CAME) for many years in the teaching of reading and language arts in undergraduate and graduate programs. He believes that a reinforcement of his present teaching procedures using the CAME approach in the form of video tape presentation will improve the discrimination of the elementary speech sounds which are essential in the teaching of word recognition, reading, and the related arts.

Review of Literature

For the past fifty years[1] there has been considerable controversy concerning the "proper" procedure and the required tools necessary to teach beginners to read the English language. The Initiator of this proposal has not found in the current literature an intensive utilization of video tape to present an adequate presentation of the elementary speech sounds. However, there has been considerable emphasis placed on the need for teachers of reading to have the best possible background in the areas

1. See A, Review of Literature

of phonics, structural analysis, and modified linguistics.

There follows an abridged bibliography of current publications stressing the need for research to improve the teaching of reading:

A. Chall, Mrs. Jeanne S. Learning to Read: The Great Debate, McGraw-Hill 1967 (Reviewed in Carnegie Quarterly, Carnegie Corporation of New York, Volume XV, No. 3)

B. Shane, Harold G. Linguistics and the Classroom Teacher, Association for Supervision and Curriculum Development, Washington, D. C. 1967

C. Connor, Forrest E. and Ellena, William J., Curriculum Handbook for School Administrators, American Association of School Administrators, Washington, D. C. 1967

D. The Reading Teacher, International Reading Association, Newark, Delaware Volume 22, No. 1 October 1967

E. Austin, Mary C., Director, et al. The Torch Lighters, Tomorrow's Teachers of Reading, Harvard University Press, Cambridge, Mass. 1961

F. The School Administrator, American Association of School Administrators, Washington, D. C. Vol. 25 # 4, Dec. 1967 p.3

Objectives

The object of this pilot study is to produce five demonstration video tapes--one for each of the five short vowels--to be used as an experimental teaching technique in Education 301, The Teaching of Reading and Other Language Arts, in the 1968-9 academic year at Monmouth College, Monmouth, Illinois. The scripts for the video tapes will be prepared by Professor Charles E. Wingo and his associates, Miss Mary C. Hletko and Mrs. Mary S. Johnson, such that the filming can be accomplished during April 1968.

2. Procedure

Design

The registration in Education 301 for the 1968-9 academic year will be randomly assigned to two classes, one experimental and one control, of 10 to

15 students each. The control class will be taught the first term employing the current classroom methods of the Initiator; the experimental class will be taught the second term utilizing the prepared demonstration video tapes.

Sampling

The population sampled will be essentially members of the junior class of Monmouth College, Monmouth, Illinois who are elementary Education enrollees in Education 301, The Teaching of Reading and Other Language Arts.

Measurement and Analysis

Five pre-tests and five post-tests involving both oral and written material for each of the five short vowels will be prepared by Professor Wingo and his co-workers prior to the first term. They will be administered to both classes in an attempt to measure the skills for the discrimination and application of elementary speech sounds in word recognition, reading, and related language arts, and to determine whether or not the employment of the demonstration video tapes has improved and enhanced significantly these skills. The sample means of these class scores will be compared by t-test to determine if there is a significant difference in the population means due to the use of the five video tapes for the experimental class while the control class received the instruction without the tapes.

3. Product and Use

The initial goal of this pilot study, employing the CAME approach, is to provide sensory perception of the student-teacher in the mastery and utilization of auditory and visual discrimination. If the technique of video tape presentation proves to be more effective as a teaching device than the current classroom method employed by the Initiator, it is planned to extend the research to develop video tapes to include the additional elementary speech sounds

of the English language necessary for individuals to become independent and fluent readers, spellers, and creative writers. The ultimate goal, then, would be the testing of the effectiveness of teachers so trained in applying these skills in the teaching of reading from kindergarten through third grade classrooms. This can be applicable in remedial reading situations and for the teaching of English to non-English speaking individuals.

The technique of the presentation of the five short vowels is considered extremely important by the Initiator from a standpoint of conservation of time and effort for both professor and students. Furthermore, he believes that a more knowledgeable teacher-trainee will be developed. These short vowels are the code-unlocking devices for approximately 62% of the syllables in the English language.

4. Personnel and Facilities

The study will be conducted by Charles E. Wingo, Professor of Education, Monmouth College, Monmouth, Illinois in collaboration with Miss Mary C. Hletko, Argo-Summit-Bedford Park Elementary School, Argo, Illinois and Mrs. Mary S. Johnson, Yorkwood Community School District 225, Little York, Illinois.

Since 1948, Miss Hletko is coauthor with Professor Wingo of the "Reading With Phonics" series, J. B. Lippencott, Philadelphia, Pennsylvania and is a primary classroom teacher specializing in the teaching of reading in the Argo-Summit-Bedford Park Elementary School System. Miss Hletko was also Elementary Clinician of the University of Chicago Reading Clinic, and is Cooperating Supervising Teacher of Illinois State University Student Teachers. Mrs. Johnson is Elementary Supervisor (formerly Reading Supervisor) for the Yorkwood Community School District: she is currently consultant for the 3rd Revision of "Reading With Phonics." Both Miss Hletko and Mrs. Johnson have been outstanding

teachers in the phonics institutes listed below. Professor Wingo has initiated, conducted, and directed summer phonics institutes in addition to his regular college classes in the teaching of reading and educational psychology at Monmouth College. These summer institutes have been held at Monmouth College; Furman University, Greenville, South Carolina; and Carthage College, Kenosha, Wisconsin. He has also conducted institutes at the Berkshire Country Day School, Lenox, Massachusetts, and several public school systems. Professor Wingo has trained over 1500 in-service teachers over the period of the past ten years.

It is noteworthy that "Reading With Phonics" was selected by the Wycliffe Missionaries as the basic guide for the structural phonic linguistic blueprint in recording the heretofore unwritten tribal languages of the Filipinos.[1]

5. Budget

5 video tapes @ $59.00 per tape	$295.00
Audio tapes	20.00
Script preparation (video and audio tapes, 5 pre- and 5 post-examinations for oral and written testing of student teachers)	150.00
Office supplies and materials	35.00
	$500.00

1. "Current Approaches to Teaching Reading," NEA Elementary Instructional Service, Edited by Helen K. Mackintosh, Chief Elementary School Organization, Section USOE, Washington, D. C. 1965 leaflet

GRANT NUMBER IV

FINAL REPORT

DEVELOPMENT OF VIDEO TAPES ON WORD RECOGNITION SKILLS, PHONIC AND STRUCTURAL ANALYSIS, USING A MODIFIED LINGUISTIC APPROACH FOR TEACHER EDUCATION IN THE TEACHING OF READING AND RELATED LANGUAGE ARTS

Charles E. Wingo

Monmouth College

March, 1968

Professor Charles E. Wingo requested and received a $500 seed grant for the purpose of developing and producing five demonstration video tapes on the five short vowel sounds of the English language to be used as an experimental teaching technique in his course, Education 301, "The Teaching of Reading and Other Language Arts." An important phase of this course is to develop speech sound powers in word recognition as applied to the teaching of reading. It was expected that the video tape utilization would reflect a significant improvement in the auditory-visual-kinesthetic learning sequence of the class members.

With his Associates, Mary C. Hletko and Mary S. Johnson, Professor Wingo designed a pre test and a post test to be administered to both the control and experimental classes; prepared scripts for the video tapes on the five short vowel sounds; and produced the tapes with the assistance of Mr. Witold Novak, Monmouth College Audio-Visual Director, and selected Monmouth College students who had recently completed the course in Education 301.

The registration in Education 301 for the 1968-69 academic year was randomly assigned to two classes taught the first and second terms, respectively. In accordance with the experimental design, the Initiator designated the first term class as the control employing his conventional classroom procedure and taught the second term class utilizing the experimental video tapes.

The control group was administered the pre test at the first class

session, September 25, 1968, and the post test after ten instructional class sessions, October 9, 1968. The same procedure was followed with the experimental group on January 6, 1969 and January 22, 1969, respectively. The tests were evaluated and scored independently by the three researchers and the average score was recorded in per cent. This method was employed to minimize bias in scoring. There was a possible score of eighty-five points for each test.

The control class consisted of 20 participating students. The mean score in per cent was 51.59 with a standard deviation of 8.47 from the pre test. The post test, however, had a mean of 45.51 and a standard deviation of 9.77. For the experimental class of 15 students, the respective means and standard deviations were: pre test--60.23 and 8.37; post test--69.12 and 8.58. (See Table I) The time required for each group to complete the tests is shown in Table II.

A comment should now be made concerning the two tests. The pre test was an inventory test designed to determine the general knowledge of phonics and modified linguistics in the use and/or application of the five short vowel sounds of the English language, while the post test objective was to evaluate the mastery of the auditory, visual, and kinesthetic concepts as they relate to word recognition in the teaching of reading and other language arts. The post test was extremely difficult--requiring specific information, application, and in-depth knowledge of the speech sounds of the English language with emphasis on the short vowel sounds. Thus, a given pre test score would not necessarily imply an equal or higher post test score for the same individual.

The segment of the course material evaluated by the post test was covered by lecture-demonstration, classroom discussion, student participation and demonstration, and supplementary reading with both groups, but the experimental class also received instruction utilizing the video tapes in the lecture-demonstration phase. A comparison of the post test mean scores of the two groups using a t-test with a pooled estimate of the common variance produced the value $t=7.45$, indicating a highly significant increase in the post test mean of the experimental group over the post test mean of the control group.

The researchers conclude that the experimental group was able to assimilate and retain more instruction in the given time period than the control group. They believe this was due to the conciseness and clarity of the video tapes which provided better motivation in the production and retention of speech sound utilization and word recognition.

The highly favorable results of this pilot study lead the researchers to believe that the development and utilization of video tapes for the additional speech sounds will produce even more significant evidence that this approach improves the teaching of reading and other language arts at Monmouth College and other institutions of higher learning.

Summary of Expenditures

6 Video tapes @ $44.96	$269.76
Splicing tape	3.72
1 camera tripod and 1 dolly tripod	40.00
Rental charge, camera and attachments	70.00
Special secretary service	
Mrs. Simmons 16½ hrs @ $2.50/hr	41.25
Mrs. Simmons 9 hrs @ $2.50/hr	22.50
Travel expense	
Miss Mary C. Hletko	44.37
Miss Mary Johnson	8.40
	$500.00

TABLE I

TEST SCORES IN PERCENT BASED ON A TOTAL OF 85 POINTS

Class	Type of Test	Number of Students	Mean	Standard Deviation
Control	Pre	20	51.59	8.47
	Post	20	45.51	9.77
Experimental	Pre	15	60.23	8.37
	Post	15	69.12	8.58

TABLE II

TIME IN MINUTES REQUIRED FOR TEST COMPLETION

Class	Type of Test	Number of Students	Mean	Standard Deviation
Control	Pre	20	27.15	4.56
	Post	20	38.15	4.27
Experimental	Pre	15	26.60	2.95
	Post	15	37.66	3.81

Experimental Class

Student No.	Pre-Test Scores					Post-Test Scores				
	H	J	W	Sum	%	H	J	W	Sum	%
1	61	61	61	183	71.76	63	63	63	189	74.12
2	43	43	43	129	50.59	54	54	54	162	63.53
3	47	47	47	141	55.29	48	48	48	144	56.47
4	56	56	56	168	65.88	59	59	59	177	69.41
5	57	57	57	171	67.06	61	61	61	183	71.76
6	50	50	50	150	58.82	59	59	59	177	69.41
7	53	53	53	159	62.35	65	65	65	195	76.47
8	56	56	56	168	65.88	64	64	64	192	75.29
9	53	53	53	159	62.35	55	56	55	166	65.10
10	45	45	45	135	52.94	48	48	48	144	56.47
11	35	35	35	105	41.18	48	48	48	144	56.47
12	58	58	58	174	68.24	73	73	73	219	85.88
13	59	59	59	177	69.41	62	62	62	186	72.94
14	49	49	49	147	57.65	66	66	66	198	77.65
15	46	46	46	138	54.12	56	56	56	168	65.88
					903.52					1036.85

$\bar{y} = 60.23$
$s = 8.37$
$s^2 = 70.01$

$\bar{y} = 69.12$
$s = 8.58$
$s^2 = 73.61$

Control Class

55 possible

Student No.	Pre-Test Scores H	J	W	Sum	%	Post-Test Scores H	J	W	Sum	%
1	27	26	27	80	31.37	40	40	40	120	47.06
2	59	60	61	180	70.59	53	52	55	160	62.75
3	50	50	49	149	58.43	39	40	41	120	47.06
4	40	39	39	118	46.27	34	36	36	106	41.57
5	35	37	34	106	41.57	25	25	25	75	29.41
6	42	39	37	118	46.27	30	30	30	90	35.29
7	44	43	44	131	51.37	47	47	47	141	55.29
8	41	41	35	117	45.88	45	45	45	135	52.94
9	47	47	47	141	55.29	45	45	53	143	56.08
10	49	47	47	143	56.08	38	36	38	112	43.92
11	44	44	43	131	51.37	24	24	24	72	28.24
12	46	46	46	138	54.12	41	41	41	123	48.24
13	41	41	41	123	48.24	32	32	32	96	37.65
14	53	53	54	160	62.75	38	38	37	113	44.31
15	42	43	42	127	49.80	41	41	41	123	47.84
16	50	50	49	149	58.43	40	40	40	120	47.06
17	36	36	36	108	42.35	39	39	39	117	45.88
18	48	48	51	147	57.65	41	41	41	123	48.24
19	46	46	46	138	54.12	50	50	50	150	61.22
20	44	40	43	127	49.80	24	24	29	77	30.20
					1031.75					910.25
					$\bar{y} = 51.59$					$\bar{y} = 45.51$
	$s^2 = 71.79$				$s = 8.47$	$s^2 = 95.48$				$s = 9.77$
21	45	45	46	136	53.33	60	60	70	190	74.51
22	38	38	37	113	44.31	30	30	31	91	35.69
					97.64					110.20
					(49.82)					(55.10)

Control Class

Test Time

	Pre Test y_i	y_i^2	Post Test y_i	y_i^2
1.	25'	625	35'	1225
2.	31	961	42	1764
3.	26	676	43	1849
4.	22	484	32	1024
5.	35	1225	42	1764
6.	24	576	35	1225
7.	28	784	44	1936
8.	29	841	38	1444
9.	26	676	36	1296
10.	28	784	36	1296
11.	27	729	36	1296
12.	28	784	43	1849
13.	27	729	34	1156
14.	22	484	31	961
15.	40	1600	44	1936
16.	30	900	43	1849
17.	25	625	37	1369
18.	27	729	36	1296
19.	22	484	34	1156
20.	21	441	42	1764
	543	15137	763	29455
	$\bar{y}=27.15$		$\bar{y}=38.15$	
	$s=4.56$		$s=4.27$	

Experimental Class

Test Time

	Pre Test y_i	y_i^2	Post Test y_i	y_i^2
1.	33'	1089	41'	1681
2.	24	576	34	1156
3.	24	576	30	900
4.	26	676	41	1681
5.	28	784	37	1369
6.	27	729	40	1600
7.	31	961	41	1681
8.	24	576	34	1156
9.	22	484	40	1600
10.	28	784	41	1681
11.	28	784	40	1600
12.	23	529	34	1156
13.	27	729	32	1024
14.	27	729	40	1600
15.	27	729	40	1600
	399	10735	565	21485
	$\bar{y}=26.60$		$\bar{y}=37.66$	
	$s=2.95$		$s=3.81$	

GRANT NUMBER V

SEED GRANT REQUEST

PREDICTING SUCCESS IN COLLEGE

Submitted by

John R. Graham
Lake Forest College

LAKE FOREST COLLEGE / LAKE FOREST, ILLINOIS

DEPARTMENT OF PSYCHOLOGY

February 20, 1968

Dr. George L. Melville
Knox College
Galesburg, Illinois

Dear Dr. Melville:

Please consider this letter as a request for a seed grant to help support a pilot study. For some time now I have been involved in research concerning the prediction of various aspects of college success (academic and non-academic). A complete description of the project and a summary of preliminary findings are included in the enclosed progress report. The project is of vital importance to Lake Forest College and to educational institutions in general. Such research can help us to understand the kinds of factors which influence students' performance while in college. This information would be useful for several reasons. First, it would help the admissions office in the development of more effective selection procedures. Second, knowledge of this kind would be of practical utility in counseling and advising students who are experiencing academic and other kinds of difficulties while in college. Finally, the college might find such information of value in planning various aspects of the college atmosphere in such a way as to be most beneficial for students.

Although we have been working on this project at a slow pace for some time, we are now at a point where someone must devote some concentrated effort to statistical analysis, interpretation of results, and preparation of a report. It is for this purpose that financial support is requested. I plan to spend about 1/18 of an academic year (about two full weeks) finishing the project. Since this would be after the end of the current school year, I am requesting that 1/18 of my current salary ($526) be provided to allow me to devote the necessary time to the project. An additional $50 is requested to support the clerical assistance which will be needed. In other words, a total of $576 is requested to be expended during the last two weeks of June, 1968.

If the results of the project are positive, as preliminary data indicate they will be, it is entirely possible that a longer study (following students for four years of college instead of one), could be undertaken at a later time.

I appreciate the consideration I know you will give to this request.

Sincerely,

John R. Graham

John R. Graham
Assistant Professor

JRG:ds
Enclosures

P.S. I have given a copy of this request to Dean Dunn and am enclosing an extra copy in case you want someone at Monmouth to have it.

GRANT NUMBER V

FINAL REPORT

PREDICTING SUCCESS IN COLLEGE

John R. Graham

Lake Forest College

June, 1968

Predicting Success in College

John R. Graham

Lake Forest College

For years professional people from many disciplines have been concerned with understanding and predicting success in college. As the emphasis on "education for the masses" increases, identifying students who are likely to fail in the college experience and finding ways of preventing the failure become even more meaningful goals.

Numerous research projects in psychology and related fields have offered some insight into the dynamics of success and failure in college. Basically, two important dimensions emerge as one reviews the research literature: the nature of success; and the variables which allow prediction of success. On the one hand are studies which have defined success in terms of an achievement measure, such as grade point average (GPA), and on the other, those which have studied non-academic measures of success, e.g., attitudes, personality, adjustment, leadership, etc. Early studies almost always used as predictor variables intellectual measures such as high school grades, intelligence, and achievement or aptitude test scores. More recently, however, there has been an emphasis on non-intellectual personality factors as predictor variables.

Intellectual Predictors - Academic Criterion

Studies investigating the relationship between achievement and/or aptitude test scores and actual academic achievement in college have found only modest correlations (.20 to .60) between predictor variables and criterion measures (Frederiksen and Schrader, 1952; Henderson and Malveg,

1959; Vinegard, 1958; Wallace, 1951). High school academic performance has been demonstrated to be a relatively good predictor of academic achievement in college, but the absolute level of predictive accuracy has not been great (Brinkman, 1967; Williams and McQuary, 1953). When various intellectual measures (test scores and high school performance) are combined, prediction is usually greater than when either variable is considered alone (Cole, 1951; Narayana, 1964).[1]

Personality Predictors - Academic Criterion

Two recent studies have indicated a significant relationship between scores on objective personality inventories (Minnesota Multiphasic Personality Inventory and California Psychological Inventory) and academic achievement in college (Barger and Hall, 1964; Flaherty and Reutzel, 1965). On the other hand, performance on a projective test (Rorschach) was not significantly related to success in college (Clark, 1958).

A number of studies have suggested a positive relationship between certain kinds of biographical data (type of high school, parents' education, extra-curricular activities in high school, rural versus urban home setting, religion, etc.) and college success (Hopkins, Mallison, and Sarnoff, 1958; Sinah, 1966; Watson, 1965).

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[1] Included in this category is a recent unpublished study done for Lake Forest College by Educational Testing Service in which the multiple Rs between combined intellectual predictors and grade point average were .34 for men and .41 for women.

The literature contains numerous studies reporting the relationship between specific personality traits and academic achievement. For example, Cole and Miller (1967), Irvin (1967), and Lunneborg and Lunneborg (1967) have all reported a positive relationship between intensity of the achievement motive and academic success in college. On the other hand, Barnette (1961) and McKeachie, Isaacson, Millholland, and Lin (1968) have found no significant relationship between the achievement motive and success in college. Other personality characteristics which have been related to academic achievement are divergent thinking (Eastwood, 1965) and affiliation (McKeachie, Lin, Millholland, and Isaacson, 1966).

Personality Predictors - Non-academic Criterion

Studies in this category have investigated the relationship between certain personality and demographic variables and personal (psychological) adjustment of college students. Cooke and Kiesler (1967) have demonstrated that students who require psychological counseling for personal problems while in college tended to be judged as more neurotic in terms of their MMPI profiles. Heilbrun (1962) reports that higher identification with the father is associated with better personal adjustment for male college students. Lundin and Sawyer (1965) report a positive relationship between anxiety and tendency to overindulge in the use of alcoholic beverages. It has also been reported that there is no significant relationship between residential origin of students and their counseling needs (Narvin, 1955).

Intellectual Predictors - Non-academic Criterion

There are no studies of this kind reported in the psychological research literature.

Integrated Studies

A few studies reported in the literature have attempted to utilize a combination of intellectual and personality predictors and also a combination of academic and non-academic measures of college success. Results of these studies tend to indicate that the addition of personality variables to intellectual ones tends to increase the accuracy with which academic achievement may be predicted among college students (Frick and Kenner, 1956; Steinberg, Segel, and Levine, 1967; Stricker, 1965).

One of the very few studies in the literature which utilized a combined (academic and non-academic) measure of college success was that of Anastasi, Meade, and Schneiders (1960). They demonstrated that a specially designed biographical inventory was very useful in predicting college success defined in terms of academic achievement, leadership ability, personality adjustment, and other positive traits.

In summary, it seems clear from previous studies that it is possible to predict with modest success academic achievement in college. In addition, there is evidence that the inclusion of certain personality variables is likely to increase the accuracy of prediction. Little research is available concerning the relationship between intellectual traits and non-academic success or between non-intellectual traits and non-academic success. It seems imperative that success in college be defined in broader terms than merely grade point average or a similar index of performance. Clearly, there are more ways to be successful in college than merely achieving good grades. The college experience is intended to increase within the individual student a sense of responsibility,

leadership, and especially competence in handling himself in his life situation. It is not possible to conclude from previous studies the extent to which various traits or characteristics are related to success defined in this broader way.

The purpose of this study was to systematically investigate the relationship between intellectual and non-intellectual characteristics of students and success in college (academic and non-academic).

Method

Of the 303 freshmen entering Lake Forest College in the fall of 1966, 263 participated in a testing session as part of orientation activities. As part of the testing procedure, each S completed the Minnesota Multiphasic Personality Inventory (MMPI) and the California F Scale. In addition, for each S the SAT Verbal and Math scores and high school rank (decile) were obtained from admission applications. Twenty-five scales from the MMPI combined with the other scores available for each subject yielded a total of 29 scores (predictor variables) for each subject. See Table 1 of the Appendix for a list of predictor variables.

For those Ss who completed the first year of school at Lake Forest College (received grades for 9 courses) four kinds of criterion information were collected.

Academic Performance. The academic records of each S were examined and a numerical value assigned to indicate the level of academic performance achieved during the first year. The grades of Honors (H), High Pass (HP), Pass (P), and Fail (F) were assigned the values of 4, 2, 1, and 0 respectively. The S's academic performance criterion score was simply a sum of

the values for the nine courses completed during the year. Of the original 263 Ss tested, 221 completed 9 courses during the first year. The remaining 42 Ss were dismissed for academic reasons, transferred to other schools, left Lake Forest College for some other reasons, or simply did not complete nine courses.

Dormitory Adjustment. At the end of each term during the first year the student counselors in the college dormitories provided ratings of the adjustment and dormitory behavior of each S in the study who resided in a dormitory. The counselors rated three aspects of behavior: leadership, socialization, and respect for regulations in the dormitory. See Table 2 of the Appendix for a sample of the rating instrument. The rating scales were scored in such a way that a low score was indicative of good adjustment. The S's dormitory adjustment criterion score was simply a sum of the ratings for the three terms of the first year. Of the 221 Ss who completed nine courses during the first year, dormitory ratings were obtained for 202. The remaining 19 students did not live in the dormitory for three terms during the first year, or for some reason the counselors did not complete ratings for them.

Disciplinary Criterion. For each of the 221 Ss who completed nine courses, the Dean of Students Office provided a report of any official disciplinary actions taken concerning the student. A notation was made for each student indicating whether or not he had been officially involved with the Dean of Students Office for disciplinary reasons. Of the 221 students, only 20 had records of disciplinary action.

Counseling Criterion. For each of the 221 Ss who completed nine courses, the Psychological Services Center indicated whether or not the student had received counseling or therapy at the Center during the first year of college. Of the 221 students, only 10 had availed themselves of the services of the Center. For each S a notation was made indicating whether or not he had received counseling.

Results

Academic Performance

The 29 predictor scores and the academic performance criterion score for each of the 105 males in the sample of 221 Ss were subjected to a multiple regression analysis in order to determine the best formula for predicting academic performance. A similar analysis was conducted for scores of the 115 females in the sample. The regression coefficient and proportion of variance accounted for by each predictor variable for the male and female analyses are reported in Tables 3-6. The partial correlation coefficients between each predictor variable and the academic criterion are reported in Tables 7 and 8.

It should be noted that no single variable accounted for more than 15 per cent of the variance in academic performance scores and that the total proportion of variance accounted for by all variables was approximately .36 for both males and females. The multiple correlation coefficients (reflecting degree of predictive accuracy) for males and females were .61 and .62 respectively ($p < .01$ for both).

In order to cross-validate the predictive power of the regression equation for academic performance, a new sample was obtained. Of the 304

freshmen entering Lake Forest College in the fall of 1967, 266 students (116 males; 150 females) completed the same battery of tests administered to the original sample on which the equations were developed. The academic performance of each S was also obtained as for the derivation sample. The five predictor variables for each sex which contributed the most to variance in the original analysis were used as a predictive equation for the new sample.[2] The multiple correlation coefficient between these five predictor variables and the academic performance criterion for the 198 Ss who completed nine courses was .15 for males (N=89) and .24 for females (N=109). It should be noted that these correlations are much lower than those obtained for the derivation sample. Such shrinkage is not unusual, however, and emphasizes the importance of cross-validating regression equations on a new sample.

Dormitory Adjustment

The 29 predictor scores and the dormitory adjustment criterion score for each of the 95 males and 107 females for whom dormitory ratings were available were subjected to multiple regression analyses in order to determine the best formulas for predicting dormitory adjustment. The regression coefficient and proportion of variance accounted for by each predictor variable for the male and female analyses are reported in Tables 9-12. The partial correlation coefficients between each predictor variable

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[2] Although only several variables had any meaningful relationship to academic performance, five variables were included since that number could be easily handled by our present equipment (Program 101 Computer).

and the dormitory criterion are reported in Tables 13 and 14.

Again, no single predictor variable accounted for more than 12 per cent of the variance in dormitory adjustment scores, and the total proportion of variance accounted for by all variables was approximately .50 for males and .34 for females. The multiple correlation coefficients for males and females were .72 and .58 respectively. These values are both significant beyond the .01 level.

The regression equations for dormitory adjustment were cross validated for those subjects used in the cross-validation of the academic equations for whom dormitory ratings were available. Again, only the five variables which contributed most in the original analysis were included in the cross-validation formula. The multiple correlation coefficient between these five predictor variables and the dormitory criterion was .13 for males (N=99) and .06 for females (N=114). Neither of these values was significant at the .05 level.

Disciplinary Criterion

Because of the extremely small number of Ss for whom there was any record of disciplinary action, it was not appropriate to utilize the multiple regression analysis. Instead, the test scores for the 9 male and 11 female disciplinary cases were compared with test scores for random samples of students for whom there had been no record of disciplinary action. The means and standard deviations for each score for the two groups (disciplinary and control) are presented in Tables 15 (male) and 16 (female) of the Appendix.

It should be noted that females in the two groups did not differ significantly for any score, while the males in the two groups differed significantly for only two of the 29 scores (Cannot Say and Control scales of the MMPI).

Counseling Criterion

Because of the very small number of Ss who received counseling during the first year (8 females and 2 males), it was not appropriate to compute multiple regression analyses. The test scores of the eight females who received counseling were compared with the test scores of a group of eight randomly selected females for whom there was no record of counseling. The means and standard deviations for each score for the two groups (counseling and control) are reported in Table 17 of the Appendix. The two groups of females differed for seven of the 29 scales.

Because there were only two males who received counseling, no comparison with a control group was appropriate.

Discussion and Conclusions

The most striking finding of this study was that no test score or combination of test scores was strongly related to any of the four criterion measures. Further, what appeared to be significant positive relationships between predictor and criterion variables in the original sample (.61 and .62 for academic; .72 and .58 for dormitory) decreased to insignificance when the regression equations were cross-validated on a new sample from the same setting. One must wonder how many of the positive and significant relationships reported in the literature would hold up under cross-validation procedures.

Academic Performance

Clearly, the predictive ability of the regression equations for the derivation sample surpassed that reported in most studies in the literature. The combination of intellectual and non-intellectual variables seemed to account for the increase.

For males in the sample, three personality scales accounted for more variance than any other measures. While high school performance was the fourth best predictor, the traditional SAT (verbal and math) scores accounted for virtually none of the variance in academic performance. The intellectual variables were far better predictors for females. The SAT verbal score was the best predictor; high school rank was fourth; the SAT math score was eleventh. Although the best predictor, the verbal score accounted for only 15 per cent of the variance in females' academic performances. Clearly, these findings suggest that one must re-examine the routine (and sometimes religious) use of traditional measures such as SAT scores, particularly for men.

Further, the discouraging correlations obtained in the cross-validation procedures suggest that we know very little about the kinds of factors which account for (or influence) academic performance in college. Whatever the variables are which are most responsible for differences in academic performance, they clearly are not the ones traditionally measured and are not the ones measured in this study.

Dormitory Adjustment

One reason that non-academic aspects of college success have not been studied extensively is that such characteristics are extremely difficult

to quantify and measure. The dormitory ratings in this study clearly fall short of being perfect measures of such characteristics. First, the rating instrument was by necessity very brief (in order to assure the cooperation of the counselors). Second, the raters (counselors) certainly did not know each S as well as would have been desirable for making the ratings. Nevertheless, the rating instrument, in spite of its limitations, offered some indication of non-academic aspects of college functioning.

As with the academic criterion, no variable accounted for very much of the variance in dormitory ratings. For males only three variables (all non-intellectual) accounted for more than five per cent of the variance. For females, only two variables (again non-intellectual) accounted for more than five per cent of the variance. In the original sample it seemed that combining the intellectual and non-intellectual variables led to good predictive power (.72 for men and .58 for women). Unfortunately, a great deal of shrinkage took place when the equations were applied to the cross-validation sample. Although shrinkage is expected, the extent to which it occurred in this instance was unusual. It can probably be accounted for by the fact that there was very little variability in dormitory ratings in the original sample. Only a few individuals deviated from the typical or average rating. Such a set of circumstances is likely to lead to inflated correlations in the original sample and great shrinkage in cross-validation. Again, one must conclude that we do not know very much about what factors (intellectual or non-intellectual) influence a student's behavior and participation in dormitory activities.

Disciplinary and Counseling Criteria

Because of the extremely small number of students for whom there was any official disciplinary action, conclusions based on these data must be very tentative. Females in the disciplinary and control groups did not differ significantly for any of the 29 test variables; men in the two groups differed for only two of the 29 variables. Since one would expect almost two *t* analyses to be significant by chance when so many are computed, one must conclude that students who are involved with the Dean of Students office for disciplinary reasons do not differ from students not so involved for any of the characteristics measured by the 29 test variables used in this study. Whether differences might emerge with a larger sample is an empirical question which could be answered through more extensive research.

Because only two males received counseling at the Psychological Services Center during the first year, it was not possible to analyze characteristics which might differentiate these males from students who did not receive counseling. It is interesting to note, however, that many more females than males availed themselves of the services of the Center.

Females who received counseling at the Center differed from females who did not receive counseling for seven of the MMPI scales (Hs, Hy, Pt, Si, A, Ca, and Dy). If one analyzes these seven factors the picture which emerges is one of a neurotic, anxious individual who is full of self-doubts and concerns. It is interesting that this kind of person is the one who comes for counseling rather than the acting-out individual. The possible explanation might be that counseling at the Center is almost always voluntary and student initiated, and students who act-out or cause difficulties

to others are handled in some other way (referral to outside agencies, expulsion, etc.).

Clearly there seem to be enough differences between the counseling and control groups to offer some hope that maladjustment might be predictable at the time the student enters college. Further research to verify and possibly clarify these differences would be very interesting and worthwhile.

Conclusions

In summary, several tentative conclusions seem in order:

(1) Although the addition of non-intellectual measures to the traditional intellectual ones leads to an increase in the accuracy with which academic success may be predicted, the overall accuracy with which such prediction can be made is quite low. We simply do not know what factors are important in academic success in college!

(2) Much doubt is cast on the validity of routinely using the traditional intellectual predictors of success in college.

(3) No differences were found between students who are involved in official disciplinary action with the Dean of Students office and those who are not. Perhaps such difficulties are more situation-centered than personality-centered.

(4) There seem to be important personality differences between students who seek counseling on the campus and those who do not. The former individuals seem to be more neurotic, anxious, and insecure than the latter.

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APPENDIX

Table 1

Predictor Variables

Abbreviation	Label
Cal F	California F Scale (Authoritarianism)
CNS	Cannot Say (unanswered items)
L	Lie (Validity Scale)
F	F (Validity Scale)
K	K (Validity Scale)
Hs	Hypochondriasis
D	Depression
Hy	Hysteria
Pd	Psychopathic Deviate
Mf	Masculinity - Femininity
Pa	Paranoia
Pt	Psychastenia
Sc	Schizophrenia
Ma	Hypomania
Si	Social Introversion
A	Welsh Anxiety
R	Welsh Repression
Es	Ego Strength
Lb	Low Back Pain
Ca	Caudality
Dy	Dependency
Do	Dominance
Re	Social Responsibility
Pr	Prejudice
St	Social Status
Cn	Control
Hs Rank[a]	High School Rank
SAT V	SAT Verbal
SAT M	SAT Math

[a] A low score for this variable indicates high academic performance in high school.

Table 2

Dormitory Rating Scale

1. To what extent does the student display leadership qualities in the dorm (check one):

   _____A. Not at all.
   _____B. Participates in activities but is more of a follower than leader.
   _____C. Is a leader of students but holds no formal office or position of leadership (committee chairman, etc.).
   _____D. Holds formal office or position of leadership.

2. To what extent does the student associate or socialize with others in the dorm (check one):

   _____A. Not at all; stays to self most of time.
   _____B. Not very much; stays to self much of time but occasionally engages in bull sessions, etc.
   _____C. Quite a bit; frequently involved in bull sessions and other activities with fellow students.
   _____D. A great deal; almost always involved with other students; rarely spends time alone.

3. To what extent does the student cause or become involved in difficulties in the dorm (check one):

   _____A. Never causes any difficulty.
   _____B. Occasional noice, rowdiness, etc.
   _____C. Frequently disturbs others; minor infractions of rules.
   _____D. Continuous difficulties; major infractions of rules.

Table 3

Regression Coefficients (Beta Weights) to Academic Criterion (Male)[a]

Variable	Regression Coefficient
Cal F	0.00611
CNS*	0.16739
L	-0.05914
F	0.05071
K	-0.13976
Hs	0.03226
D	-0.02177
Hy	-0.04851
Pd	-0.06741
Mf*	0.12255
Pa	-0.05477
Pt	0.12289
Sc	0.00933
Ma*	-0.05850
Si	-0.03947
A	-0.09824
R	0.04715
Es	0.11759
Lb	-0.02125
Ca*	0.20944
Dy	-0.14088
Do	0.16536
Re	0.00967
Pr	0.03868
St	-0.06169
Cn	-0.00427
HS Rank*	-0.36737
SAT V	0.00475
SAT M	-0.00152

[a] Intercept = 4.01987

* used for cross-validation of regression equation

Table 4
Regression Coefficients (Beta Weights) for
Academic Criterion (Female)[a]

Variable	Regression Coefficient
Cal F	0.00722
CNS	-0.28146
L	-0.01186
F	-0.13979
K*	-0.17992
Hs	-0.04965
D	-0.01983
Hy	-0.04103
Pd	-0.14706
Mf*	-0.16226
Pa	0.07883
Pt	-0.17018
Sc	0.33916
Ma	-0.01807
Si	0.11569
A	0.02021
R*	0.15809
Es	0.07555
Lb	0.11805
Ca	0.08875
Dy	-0.29679
Do	-0.18452
Re	-0.06860
Pr	0.03861
St	0.08881
Cn	-0.02625
HS Rank*	-0.81147
SAT V*	0.01594
SAT M	0.01126

[a] Intercept = 19.10556

* used for cross-variance of regression equation.

Table 5

Proportion of Variance in Male's academic Performance Scores Accounted for by each of 29 Predictor Variables

Variance	Proportion of Variance
CNS	0.08721
Ma	0.04964
Mf	0.04628
HS Rank	0.04159
Ca	0.04054
A	0.01693
Hy	0.01563
Do	0.01074
Es	0.00837
K	0.00741
Pr	0.00627
Pt	0.00499
St	0.00486
Pd	0.00448
Dy	0.00400
Lb	0.00337
Pa	0.00305
L	0.00284
F	0.00212
Hs	0.00170
R	0.00134
D	0.00126
SAT V	0.00123
Si	0.00093
Cal F	0.00036
SAT M	0.00024
Re	0.00010
Sc	0.00009
Cn	0.00003

Table 6

Proportion of Variance in Female's Academic Performance Scores Accounted for by each of 29 Predictor Variables

Variable	Proportion of Variance
SAT V	0.15121
Mf	0.02893
K	0.02327
R	0.01887
HS Rank	0.01822
Hs	0.01396
Pd	0.01374
Dy	0.01247
Lb	0.01184
Si	0.01153
SAT M	0.01083
Sc	0.01018
St	0.00978
Do	0.00958
Pt	0.00907
F	0.00738
Pa	0.00701
Re	0.00547
CNS	0.00445
Ca	0.00297
Es	0.00175
Pr	0.00165
Hy	0.00092
Cn	0.00080
D	0.00047
Ma	0.00043
Cal F	0.00032
A	0.00008
L	0.00008

Table 7

Partial Correlation Coefficients Expressing Relationships Between Academic Criterion and Predictor Variables (Male)

Variable	Partial Correlation Coefficient
CNS	0.30575**
Do	0.23621*
Mf	0.20078*
Ca	0.18400
HS Rank	-0.17505
Pt	0.15988
Es	0.14619
Pd	-0.12129
Ma	-0.11776
Dy	-0.09856
K	-0.09639
A	-0.08366
Pa	-0.08228
F	0.07607
St	-0.07305
L	-0.07028
R	0.06283
SAT V	0.06018
Hy	-0.05797
Lb	-0.04027
Hs	0.03996
Si	-0.03993
Pr	0.03978
D	-0.03438
SAT M	-0.02317
Cal F	0.02201
Sc	0.01280
Re	0.01200
Cn	-0.00639

* $p < .05$

** $p < .01$

Table 8

Partial Correlation Coefficients Expressing Relationships Between Academic Criterion and Predictor Variables (Female)

Variable	Partial Correlation Coefficient
Sc	0.26219**
Mf	-0.24671*
HS Rank	-0.22693*
Do	-0.22162*
Pd	-0.21205*
Dy	-0.19328*
R	0.18935*
Lb	0.18897*
SAT V	0.18467*
SAT M	0.16638
F	-0.14047
Pt	-0.13584
Si	0.11565
K	-0.11279
Pa	0.10479
St	0.09733
CNS	-0.08392
Ca	0.07458
Re	-0.06684
Es	0.06634
Hs	-0.04290
Hy	-0.03398
Pr	0.03215
Cn	-0.03170
Ma	-0.02906
Cal F	0.02397
D	-0.01933
A	0.01280
L	-0.01152

* $p < .05$

** $p < .01$

Table 9

Regression Coefficients (Beta Weights)
for Dormitory Criterion (Male)[a]

Variable	Regression Coefficient
Cal F*	-0.01456
CNS	0.06284
L	0.04503
F	-0.09384
K	-0.03459
Hs	0.06878
D	0.03795
Hy	0.00559
Pd	0.00149
Mf	0.13742
Pa	-0.04744
Pt	0.01248
Sc	-0.00408
Ma	0.03364
Si*	0.23876
A	0.11105
R	-0.06607
Es	0.04448
Lb	-0.03340
Ca	0.01168
Dy*	-0.32018
Do	0.00963
Re*	0.00972
Pr	-0.02797
St	0.01539
Cn	0.00758
HS Rank*	-0.09743
SAT V	-0.00828
SAT M	0.00931

[a] Intercept = 1.98673

* used for cross-validation of regression equation

Table 10

Regression Coefficients (Beta Weights)
for Dormitory Criterion (Female)[a]

Variable	Regression Coefficient
Cal F	0.00457
CNS	-0.20077
L	0.05001
F	-0.08519
K	-0.00681
Hs	0.11489
D	0.05173
Hy	-0.15968
Pd	0.02816
Mf*	-0.07082
Pa	-0.03379
Pt*	0.08954
Sc	0.02882
Ma	0.03030
Si*	0.05503
A*	-0.23630
R	-0.04998
Es	0.04248
Lb	0.01053
Ca	0.04463
Dy	0.17431
Do	0.07133
Re	0.04655
Pr*	0.15312
St	0.04651
Cn	-0.05832
HS Rank	0.13942
SAT V	0.00407
SAT M	-0.00349

[a] Intercept = -6.44998

* used for cross-validation of regression equation

Table 11

Proportion of Variance in Males' Dormitory Scores Accounted for by Each of 29 Predictor Variables

Variable	Proportion of Variance
Cal F	0.12057
Re	0.10757
Si	0.07673
HS Rank	0.04085
Dy	0.02748
Mf	0.02482
F	0.02224
Sc	0.01765
A	0.01321
SAT M	0.01206
CNS	0.00731
R	0.00652
D	0.00586
SAT V	0.00570
Ma	0.00541
Es	0.00489
Pa	0.00480
Lb	0.00458
L	0.00442
Hs	0.00353
Cn	0.00081
Pr	0.00073
St	0.00049
K	0.00042
Do	0.00029
Pt	0.00027
Ca	0.00014
Hy	0.00008
Pd	0.00001

Table 12

Proportion of Variance in Females' Dormitory Scores Accounted for by Each of 29 Predictor Variables

Variable	Proportion of Variance
Mf	0.07208
Pr	0.05276
Pt	0.03087
A	0.02790
Si	0.02088
Dy	0.01670
Do	0.01590
L	0.01009
Ma	0.00948
Hy	0.00863
Hs	0.00795
CNS	0.00718
Re	0.00659
F	0.00617
St	0.00611
Pd	0.00587
SAT M	0.00561
SAT V	0.00407
Pa	0.00406
D	0.00365
R	0.00361
HS Rank	0.00359
Cn	0.00309
Es	0.00161
Ca	0.00141
Lb	0.00068
Sc	0.00062
Cal F	0.00044
K	0.00004

Table 13

Partial Correlation Coefficients Expressing Relationships Between Dormitory Criterion and Predictor Variables (Male)[a]

Variable	Partial Correlation Coefficient
Si	0.37113**
Mf	0.31920**
Dy	-0.31578**
F	-0.22594*
SAT M	0.22102*
CNS	0.19053
SAT V	-0.16786
R	-0.12993
Hs	0.12967
A	0.11737
Pa	-0.11584
Ma	0.11092
Lb	-0.10138
D	0.09673
Cal F	-0.08672
L	0.08656
Es	0.08375
HS Rank	-0.07764
Pr	-0.04707
K	-0.03791
St	0.03024
Pt	0.02589
Do	0.02202
Re	0.01995
Cn	0.01751
Ca	0.01742
Hy	0.01074
Sc	0.00853
Pd	0.00444

[a] Low dormitory scores indicate good adjustment. These correlations can best be viewed as relationships between predictor variables and maladjustment.

* $p < .05$

** $p < .01$

Table 14

Partial Correlation Coefficients Expressing Relationships Between Dormitory Criterion and Predictor Variables (Female)[a]

Variable	Partial Correlation Coefficient
A	-0.24832*
Hy	-0.22008*
Pr	0.21779*
Dy	0.19295*
Mf	-0.18495*
Hs	0.16834
Do	0.15208
F	-0.13726
Pt	0.12130
Cn	-0.11866
CNS	-0.10446
R	-0.10144
Si	0.09412
SAT M	-0.09024
D	0.08313
Ma	0.08210
L	0.08036
St	0.07861
SAT V	0.07858
Re	0.07744
Pa	-0.07476
Pd	0.07225
HS Rank	0.06933
Es	0.06484
Ca	0.05710
Sc	0.03846
Lb	0.03018
Cal F	0.02617
K	-0.00749

[a] Low dormitory scores indicate good adjustment. These correlations can best be viewed as relationships between predictor variables and maladjustment.

* $p < .05$

Table 15

Mean Test Scores for Male Disciplinary and Control Groups

Variable	Group: Disciplinary Mean	Disciplinary SD	Control Mean	Control SD	t
Cal F	-16.44	19.07	-24.44	20.45	0.81
CNS	0.22	0.42	1.75	1.92	-2.19*
L	43.78	5.04	43.78	4.37	0.00
F	64.11	15.23	58.56	12.34	0.80
K	48.44	9.21	52.44	8.50	-0.90
Hs	59.33	16.02	57.67	10.60	0.24
D	60.56	14.72	62.44	17.53	-0.23
Hy	62.44	11.44	61.56	11.26	0.16
Pd	63.33	12.62	64.78	13.01	-0.23
Mf	64.22	5.65	66.33	13.34	-0.41
Pa	61.78	9.47	62.67	12.34	-0.16
Pt	65.89	21.10	66.56	15.03	-0.07
Sc	73.11	21.23	71.78	17.93	0.14
Ma	64.44	12.84	58.89	9.49	0.98
Si	53.78	13.03	54.67	11.28	-0.15
A	58.67	14.84	55.22	14.05	0.48
R	46.22	5.16	49.78	8.06	-1.05
Es	54.78	11.87	51.78	12.97	0.48
Lb	55.22	8.89	49.44	13.78	1.00
Ca	59.78	17.23	57.89	12.77	0.25
Dy	56.56	13.11	54.89	11.96	0.27
Do	53.44	9.95	54.67	10.51	-0.24
Re	43.67	7.60	45.33	10.59	-0.36
Pr	53.33	13.57	48.22	11.71	0.81
St	59.33	8.25	56.78	5.58	0.72
Cn	67.78	8.45	61.22	13.28	1.80*
SAT V	562.78	62.02	587.11	68.33	-0.75
SAT M	620.11	62.44	579.33	84.97	1.09
HS Rank	3.44	1.64	3.89	2.43	-0.43

$p < .05$

Table 16

Mean Test Scores for Female Disciplinary and Control Groups

Variable	Group				t
	Disciplinary		Control		
	Mean	SD	Mean	SD	
Cal F	-26.64	18.32	-22.36	19.55	-0.51
CNS	1.64	2.60	1.27	1.60	0.38
L	46.09	5.44	49.00	9.12	-0.87
F	62.45	11.70	58.64	8.06	0.85
K	51.18	10.46	49.82	11.09	0.28
Hs	55.27	10.87	49.82	7.69	1.30
D	57.18	13.17	54.73	7.24	0.52
Hy	58.09	8.05	53.27	9.38	1.24
Pd	51.27	15.39	60.45	11.94	-1.49
Mf	49.18	6.18	44.91	9.23	1.22
Pa	59.64	9.66	60.09	9.60	-0.10
Pt	61.09	10.81	60.91	10.90	0.04
Sc	68.09	14.18	62.82	11.52	0.91
Ma	63.00	7.91	64.54	11.42	-0.35
Si	56.00	13.11	55.72	9.03	0.06
A	54.45	14.11	54.82	11.26	-0.06
R	45.55	10.21	44.09	9.23	0.50
Es	56.91	11.03	55.82	7.26	0.26
Lb	57.45	11.52	52.55	8.53	1.08
Ca	55.55	11.57	54.91	10.91	0.11
Dy	51.18	13.01	52.18	10.89	-0.19
Do	53.09	12.58	55.45	9.02	-0.48
Re	44.73	8.72	48.64	11.14	-0.88
Pr	48.36	9.79	49.00	9.32	-0.15
St	58.82	8.54	57.27	8.17	0.42
Cn	64.18	8.34	59.09	15.53	0.92
SAT V	588.09	44.87	588.45	56.96	-0.02
SAT M	590.18	81.02	606.91	55.59	-0.54
HS Rank	2.00	1.21	2.18	1.12	-0.35

Table 17

Mean Test Scores for Female Counseling and Control Groups

Variable	Group: Counseling Mean	Counseling SD	Control Mean	Control SD	t
Cal F	-32.63	19.98	-25.00	23.64	-0.65
CNS	0.63	1.11	0.88	1.36	-0.38
L	46.88	4.83	51.25	6.22	-1.47
F	59.50	6.46	54.38	4.36	1.74
K	54.50	6.80	58.38	10.23	-0.84
Hs	54.75	8.30	47.88	4.48	1.93*
D	59.00	11.06	48.38	6.28	2.21
Hy	59.50	9.27	50.88	7.64	1.90*
Pd	60.23	9.51	57.20	10.11	0.58
Mf	40.75	8.29	42.38	9.76	-0.34
Pa	64.38	9.18	52.88	7.70	2.54
Pt	64.00	8.26	51.75	7.53	2.90**
Sc	64.25	7.69	57.75	8.00	1.55
Ma	59.38	11.25	59.00	9.79	0.07
Si	64.75	6.53	50.75	6.34	4.07***
A	52.88	9.47	43.75	8.21	1.93*
R	52.50	7.07	50.13	8.70	0.56
Es	59.88	11.26	63.38	6.44	-0.71
Lb	57.50	12.98	56.25	11.65	0.19
Ca	53.63	8.94	44.50	7.71	2.05*
Dy	53.38	6.04	41.63	7.16	3.32***
Do	61.00	5.70	64.00	8.50	-0.78
Re	53.25	7.51	58.38	5.68	-1.44
Pr	44.13	8.81	41.00	6.28	0.77
St	55.75	7.19	61.63	8.47	-1.40
Cn	55.25	10.84	52.88	8.16	0.46
SAT V	647.50	62.77	584.75	88.60	1.53
SAT M	652.00	59.42	617.75	77.79	0.93
HS Rank	2.75	2.28	2.25	1.20	0.51

* p .05

** p .01

*** p .005

GRANT NUMBER VI

SEED GRANT REQUEST

THE KINESTHETIC LEARNING APPROACH VS THE TRADITIONAL APPROACH IN THE TEACHING OF MUSICAL INSTRUMENTS

Submitted by:

Peter S. Hill
Instructor of Music
Monmouth College

Traditionally, the teaching of a musical instrument has been done on a 1:1 student-teacher ratio with the primary instructional technique being that of the student imitating the teacher's performance. Correction or adjustment is made according to the difference in sound as the student hears it and/or as the teacher hears it. This has been proven to be a costly method of instruction and necessitates that the teacher be an expert on a particular instrument, or at the very least a related instrument (i.e. trumpet to trombone), in order to adequately teach the student.

With the advent of public school music programs this approach has become very nearly impossible. Here we find one teacher who must instruct a large number of students, which necessitates teaching groups rather than individuals, on a wide variety of instruments. He is most often expert on only one of the many instruments he is teaching. It is not uncommon for a public school music teacher to be unable to play to any significant degree over half the instruments he is teaching. To further complicate the situation, most of the group instructional books in common use, such as those published by Rubank, Inc., and Belwin, while designed for public school use, still presupposes the demonstration-imitation technique. In many cases, therefore, less than superior results are accepted as being a necessary evil of public school music.

If the problems of playing an instrument can be significantly broken down into small tasks, and if the student can be given a frame of reference other than listening to an example, the necessity for specialized performing teachers could be eliminated in the elementary and intermediate stages of learning to play a musical instrument. This, of course, pre-supposes that an adequately trained teacher of music can hear correct techniques even though he may not be able to demonstrate them.

The concept of the use of kinesthetic learning[1] in music is not new and has been used by many studio teachers, such as the flutist, James Pellerite, and the trumpeter, Robert Grocock, in the teaching of or the overcoming of certain specific problems. Most frequently this approach is used in connection with breath control on wind instruments. The concept as applied to tone and technique is mentioned in the books "The Art of French Horn Playing" by Philip Farkus, and "Essentials of Technical Dexterity for Clarinet" by William Stubbins. To the knowledge of the initiator, these and other sources do not, however, treat or develop this concept into a systemized approach for the teaching of all aspects of instrumental playing.

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[1] The term "kinesthetic learning", as used in the context of teaching instrumental music, refers to the use of the sense of touch and other physiological sensations as cues in the learning and perfecting of the techniques used in playing a musical instrument.

Further, they do not accord this concept its full potential or capabilities as a distinct and unique approach to the problems of instrumental teaching.

This study proposes, as a method of instrumental musical instruction, to establish a set of tasks in a form of modified program learning and replace auditory imitation with kinesthetic sensation as a basis for mastery of these tasks.

This study would then attempt to test the effectiveness of this kinesthetic learning approach as compared to the traditional approach. Since this would be in the nature of a pilot study it is suggested that one area of instrumental technique be singled out and that this be applied to only one family of instruments. Finger technique as applied to the woodwind instruments could be conducted on a reasonable basis and an adequate observation could be made in a period of two to three months.

The subjects will be divided into two groups and will be taught on a bi-weekly basis for eight weeks. Each subject will receive two half-hour lessons with all those in groups A being taught exclusively through the kinesthetic approach while those in groups B may be taught by any other or combination of other approaches regularly used by the participating instructors. Each subject will be required to practice a minimum of thirty minutes per day outside of class and furnish a written record of this practice at the

conclusion of the study. In the instance of subjects under the age of 16, the initiator will request the parents or guardians of said subjects to verify the practice records.

The subjects will be chosen by band directors at three different high schools in the Monmouth, Illinois area. These directors will also serve as the participating instructors. Each director will choose two pairs of musicians from his instrumental program and each pair shall consist of two players of the same instrument and be of like ability, experience and age. The director will then randomly assign one from each pair to group A and the other to group B. The individual directors shall teach the subjects they assign to group B and the initiator will teach the subjects they assign to group A.

At the beginning of the study, each subject will be presented a series of exercises to perform on his instrument. These exercises will be designed by the initiator for each specific instrument. The subjects will be allowed twenty minutes to examine or practice these exercises and then will be recorded on tape. At the conclusion of the study the subjects will again be presented with these exercises and after twenty minutes of practice will be recorded a second time.

The two performances of each subject will be compared and quality decisions will be made according to improvement in clarity, smoothness of technique, accuracy, and speed. In addition, comparisons will also be made between A and B of each pair and between

group A and group B. These comparisons will be made by three evaluators who shall be qualified performers as well as teachers.

Should the experimental group show a faster rate of improvement and/of more significant improvement, this would suggest the further testing of kinesthetic learning in other areas of instrumental musical training and on a wider diversity of musical intruments. If the kinesthetic learning approach should again prove superior to the traditional approach there would then be a scientific basis for the formalizing of this theory into a workable system for the teaching of each different musical instrument. There would also be a need to prepare musical exercise books that would develop this approach and that would be usable in the public schools. Successful completion of a method of this type could change a teacher oriented type of learning into a student oriented type of learning. This could help to eliminate the need for a 1:1 student-teacher ratio and also greatly increase the efficiency and potential of the group instruction technique which is currently in general use in the public schools. Particularly in the case of the younger student, it would enable a child to improve away from the classroom without the need of a model to imitate. In the kinesthetic approach the child makes corrections according to sensations within himself rather than according to a comparison with a model or as a result of teacher criticism.

The participating instructors are all music educators, currently

active in secondary public school teaching, and have been associated with their schools for at least five years. These educators include Clarence Patterson, Director of Music at Warren Community High School; Joseph DeWeese, Director of Music for the Yorkwood School District; and Lester Munneke, Director of Music at Monmouth High School.

At the completion of the project the results will be evaluated by Floyd Peterson, clarinetist and Chairman of the Music Department at Nebraska Wesleyan; Rosalee White, Instructor of Oboe at DePauw University; and David Sublette, Instructor of Clarinet at Fredonia State College. All three of these musicians are well acquainted with the problems of teaching finger technique to woodwind players and are therefore qualified to make quality judgments concerning improvement and comparisons of performances of a standard exercise.

BUDGET

I.	Transportation of students to and from participating instructors	$ 50.00
II.	Instructional Fees for participating instructors	300.00
III.	Audio-visual equipment	
	a. Magnetic recording tape	14.04
	b. Plastic leader tape	.69
	c. Blank reels	2.88
	d. Rental of broadcast quality tape recorder	15.00
IV.	Evaluation cost	60.00
V.	Preparation of testing exercises and evaluation forms	40.00
VI.	Office supplies and postage	15.39
	Total	$500.00

GRANT NUMBER VI

A REPORT OF THE SEED GRANT PROPOSAL OF

PETER S. HILL

ENTITLED

"THE KINESTHETIC LEARNING APPROACH VS THE TRADITIONAL APPROACH IN THE TEACHING OF MUSICAL INSTRUMENTS"

FINAL REPORT

STATEMENT OF THE PROBLEM

This study proposes to explore the potential of kinesthetic sensation as a tool in the teaching of musical instruments. As a working hypothesis it will be assumed that musical performance on the elementary and early intermediate level is essentially a physical task and that this task can be broken down into more basic sub-tasks. These sub-tasks then can be studied and mastered in an orderly and progressive manner using a form of what might be called psycho-motor training. This is counter to the traditional use of auditory sensation as the primary learning cue in the teaching of musical instruments. If the hypothesis is correct, then on the elementary and early intermediate level of instrumental musical instruction, a more effective and efficient learning will take place if the sense of touch and other physiological sensations are used as the primary cues in the learning and perfecting of the techniques used in playing a musical instrument. It shall be the purpose of this study to compare the effectiveness of these two general approaches, kinesthetic vs auditory or traditional, in the teaching of musical instruments.

DELIMITATIONS

For the purpose of this study, it was necessary to choose one area of instrumental music instruction that could be analyzed and tested under the limited budget and timetable of a pilot study. The experimentor chose to work in the area of woodwind instruments and limited the playing task or technique to accurate finger movement. This finger movement shall be referred to as finger technique. The length of time for the experiment was initially set at eight weeks. While this was a rather arbitrary choice, the rationale used to make this decision was the length of the summer music programs of the participating school systems. These schools and many others across the nation use a eight-week training period for their summer instrumental music programs. It would follow that if this is a commonly used time period, any method of training under consideration should be able to work in this time period if the method was going to be of any real value. This time period was later forced to be reduced to seven weeks due to the unavailability of several of the subjects for the full eight-week period. With regard to the non-kinesthetic approach, there was no attempt to analyze this method or to evaluate its validity. Only the results of the use of this method of teaching as compared to the results of the kinesthetic method were to be considered. Also, since the experimentor had to do all the teaching using the kinesthetic approach, and since the population from which the subjects were to be chosen was rather small, the total number of subjects to be used was limited to a maximum of eighteen.

DESIGN

Pairs of instrumentalists were chosen and divided into two groups. Each pair consisted of two players of the same instrument and were of like ability, experience, and age. By random assignment one of the pair went into the control group and the other into the experimental group. After grouping, all the subjects were given a series of exercises to perform on their instruments, and, after a twenty-minute period of practice, these were recorded on audio tape. At the conclusion of the seven-week traing period, this procedure was repeated using the same exercises. The tapes were then edited and prepared for evaluation by outside experts.

SUBJECTS

At the onset of the experiment, it was assumed by the experimentor that there would be no great difficulty in finding suitable subjects for the study. This proved to be an erroneous assumption. A more detailed discussion of this problem will be dealt with in the Appendix under the section on comments. The subjects that were used were chosen on the basis of the following criteria:

1. Must be able to be paired with a partner playing a like instrument.

2. Must be of like ability and experience as their partner.

3. Must be of similar age - within nine months of their partner and members of the rest of their group.

The experimentor had no way of determining first hand if all of these criteria were adequately met. There is no agreement in the field of music as to how one measures musical ability except in a highly subjective manner. Two musicians may agree that an individual plays well but the rationale used to arrive at this conclusion is, at best, vague and often is a function of the prejudice of the evaluating musicians. We are dealing with what is referred to as "musical taste". Any attempt at objective evaluation of musical ability would necessitate the observing and evaluating of a musician performing under a wide variety of circumstances over a reasonable length of time. Also, one would need to be sure that the subject under consideration would be presented with a sufficient diversity of musical problems and challenges. Even if all of these conditions were met, one still runs the risk of evaluating all the parts without considering the whole. That is to say, the musician might be able to perform to a fairly high standard various aspects of instrumental technique without being able to play artistically or esthetically well.

In a realistic attempt to control this problem, the experimentor relied on the music directors of the participating schools to choose subjects that would fit the criteria. In their roles of band directors, these musicians had ample opportunity to observe the subjects over a long period of time and theoretically could meet the conditions discussed in the preceeding paragraph. After consultation with the two participating music directors, Lester Munneke of Monmouth High School and Clarence Patterson of Warren Community High School, twelve subjects were selected. Of these twelve, six were from Monmouth High School and six were from

Warren High School. A third director, Joseph DeWeese of the Yorkwood School District, was unable, in his opinion, to find available subjects who adequately met the criteria.

EXPERIMENT PROCEDURE

A meeting was held with all the subjects, who were accompanied by a parent, and the participating directors. The general experimental procedure was explained with the exception of the type of training to be given to the control group. Instead, it was stated that this experiment was to try a new method of teaching. It should be pointed out that the directors themselves did not know the specifics of the experimental method. They were informed that finger technique was the task to be compared by the two groups, but were not told any details other than that it involved kinesthetic training. This secrecy was instituted for two reasons. (1) The directors were to teach the control group students from their respective schools and (2) the experimental and control group students would be performing together in their high schools' regular summer music programs. The subjects were given a practice record form and asked to keep this up to date throughout the experiment and to turn it in at the conclusion of the experiment.* They were urged by the experimentor to try to practice a minimum of thirty minutes a day, six days a week, during the course of the experiment.

For purposes of obtaining a rough check on the validity of the subject pairing, all the subjects were given three sections of the Seashore Measures of Musical Talents. The results of this test plus the experimentor's opinion of the equality of playing ability of the members of each pair are included in Table A.

At the conclusion of the taking of the Seashore test, each subject was given a copy of the "Finger Technique Performance Test" and allowed to practice this material for a period of twenty minutes.[1]

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* See Appendix for copies of all forms and examples used in the experiment.

[1] This test, devised by the experimentor, tests the movement of each finger separately (excluding the right thumb), the movement of the fingers of each hand in combination, and the movement of fingers of both hands in combination. The degree of technical difficulty was maintained at a level commenserate with the abilty of the subjects involved in the experiment.

Directly following the practice period the subject was asked to perform this test and the performance was recorded on magnetic recording tape. No help was given to the subject, either in practice or performance, to aid him in giving an accurate reading of the material. In all instances, however, a metronome was activated to keep the indicated tempo of the musical examples. This was not done to aid the player but rather to insure that all subjects would play the examples at the same speed. It would also serve as an aid to the evaluators in determining evenness of technique. As the subject was preparing to play, the following instructions were given:

> "A metronome will be set at the tempo marked on the music. Please play all the repeats and continue playing all the exercises, one right after the other, in tempo, until you have completed Exercise N. Stop. The metronome will then be set for the new tempo and you may continue and play Exercise0. Do the best you can but do not worry about making errors and do not go back to correct any. This is not a competitive test and you are not being compared with anyone else. We will use this to see how much you have improved at the end of the experiment. Do you have any questions? If not, we will begin."

The subjects did not show any undue apprehension and all seemed to understand the directions the first time. Performance errors did occur but appeared to the experimentor to be caused by lack of sufficient finger technique to play the exercises at the tempo indicated or, in two cases, a weak concept of rhythm and/or music reading ability. After all the subjects had recorded, they were informed as to the group they had been assigned, i.e. experimental or control, and lesson schedules for the training period were established.

This was the last contact the experimentor had with the control group until the re-test at the end of the training period. The control group, three from each school, were taught by their regular directors and met according to a schedule of their director's design. Each director, with the knowledge that the task was to try and train finger technique, was free to use any method or methods (other than kinesthetic) and to use any schedule he thought best. In a sense, then, the Kinesthetic Approach would be tested against any and all other methods or approaches of teaching finger technique.

The experimental group schedule consisted of two meetings a week. One consisted of a forty-five minute group lesson for all like instruments and the other was a thirty-minute private lesson. At the first group meeting the Kinesthetic Approach to Teaching Finger Technique was explained to the subjects and they were requested not to discuss this with the members of the control group or to show them any of the special exercises they would be using in the course of the training period.

The experimentor placed as the primary task in this short-range training program the breaking down of the students' almost total reliance on auditory cues in determining technical accuracy. To achieve this end, the instruction was divided into two parts as follows:

PART ONE

A discussion and demonstration on the physiological aspects of playing as to how the player can learn to use his fingers, and the muscles involved, in the most efficient and accurate manner. Exercises were then presented to the subject that were designed to sensitize him to the physical cues present in a playing situation and to aid him to interpret these cues.[1]

PART TWO

A method of practice and self-teaching was introduced to the subjects that was designed to make primary use of the above mentioned physical cues. This process has been designated "Kinesthetic Learning" by the experimentor.[1] Remaining instructional time was used to aid the subjects in perfecting their use of this system.

It should be pointed out that there was no attempt to eliminate the subjects' use of auditory cues but rather the substitution of physical cues as the primary source of feedback in the learning situation.

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[1] A good portion of this is based on hypothesis of the experimentor as yet untested under accurately controlled situations.

EVALUATION PROCEDURE

At the conclusion of the training period, an evaluation tape was prepared in the following fashion. Each subject's pre- and post-training test was separated and edited and then assigned an example number by random selection. A master tape was then realized by splicing the twenty four examples together in the assigned order. No identification with regard to subject or group was included on the tape so as to form a double blind test. The editing mentioned above was done on a uniform basis to all examples and was done to limit the total playing time of the master tape to forty minutes. It was the experimentor's opinion that a tape of longer duration would tend to hamper the evaluation process by causing fatigue on the part of the evaluators as the rating was to be done in one session.

During the evaluating sessions, which were done on a one-to-one basis with each expert, the evaluator was given no information concerning the nature or design of the experiment and was told only that he was to evaluate twenty four performances by thirteen to fourteen-year old musicians. An evaluation form was furnished which contained a scale of five, one representing a poor performance and five an excellent performance, to be used in rating the performance of each subject on the basis of smooth, accurate finger technique. As much as possible, the evaluators were asked to eliminate bias in their judgement through variance in quality of other aspects of playing such as tone and articulation. Each evaluator was allowed to preview the tape until he felt familiar with the general level of performance he was to evaluate. Also, at the conclusion of the playing of the tape, the evaluator was free to elect to listen to the tape a second time and make any changes in rating he might desire. Only one evaluator elected to do this. A facsimile of the evaluation form is included in the Appendix.

The experts chosen to be evaluators had to meet several criteria. First, they had to be knowledgeable musicians; second, they had to be active performers on a woodwind instrument; and third, they had to be experienced in teaching students at the same age level as the subjects in this experiment. Following is a brief summary of each of the three evaluators.

EVALUATOR I

Theodore C. Heges, Assistant Professor of Music, Marshall University, Huntington, West Virginia. Mr. Heges has studied at the Curtis Institute of

Music in Philadelphia and holds the B.A. and M.A. degrees in music from the University of Iowa. He was formerly an oboist with the U. S. Marine Band in Washington, D.C.

EVALUATOR II

Dr. James Lakin, Assistant Professor of Oboe, University of Iowa, Iowa City, Iowa. Dr. Lakin holds the B. Mus. degree from Michigan State University, and the M. Mus. and A. Mus. D. from the University of Michigan.

EVALUATOR III

Dr. Lyle C. Merriman, Associate Professor of Clarinet, University of Iowa, Iowa City, Iowa. Dr. Merriman holds the B.M.E. degree from Kansas University and the M. A. and Ph. D. degrees from the University of Iowa.

TEST RESULTS

A t-test indicated there was no significant difference between the sample means of the evaluators' composite ratings from either the experimental or the control group, but this is believed to be caused by the small number of items being compared. Further data was gained by comparing the composite scores of the experimental group's pre- and post-training test with those of the control group's pre- and post-training tests.[1] The experimental group showed a net gain of 13 points, going from 53 to 66, while the control group showed a net gain of 12 points, going from 48 to 60. Both groups contained one subject with a 0 gain while the experimental group contained the only subject with a negative gain. The experimental group also contained the subject with the largest net gain, going from 8 to 15 for a plus 7.

There were no results of performance as related to practice time due to the experimentor's inability to control the subjects' regular and accurate keeping of practice records. This phase of the experiment had to be abandoned.

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[1] The evaluations of the experts appear as Table D in the Appendix and the composite scores used for comparison appear as Table E.

CONCLUSIONS

Even though no superiority of either method was statistically indicated, it is important that, at the very least, the Kinesthetic System is competitive with the traditional teaching methods. It is the opinion of the experimentor that the small size of the sampling is the main cause for the lack of statistical results. Further statements on this are contained in the comments section of the Appendix.

During the running of the experiment, five members of the experimental group became quite interested in the system and stated that they felt it helped them in learning new music and that they were making a noticeable improvement in their playing. They all reported that it helped them to better understand the problems of playing and practicing. In two cases, particularly subject 4-A, the amount of practice time increased as they understood the system more fully. While these statements of student feedback do not constitute measureable data, they do indicate that the Kinesthetic System has a potential motivational value that should be considered for further study and evaluation.

APPENDIX

COMMENTS

During the course of conducting and evaluating this study, several weaknesses and errors in design have come to the attention of the experimentor. It is felt that a brief comment on these will be of significant value to the worth of the study.

Summer Program

The selection of the summer music program as a time to run the study proved to be poor on several counts. First, absenteeism proved to be much higher than expected (in both the control and experimental groups) and second, the vacation schedule of many families eliminated many students as potential subjects. If the study had been held during the regular school year, a much greater control over attendance could have been exerted. A third point against using a summer schedule, in this instance at least, is the more relaxed and leisurely pace of instruction and participation on the part of the students and control group instructors. A more accurate test of system efficiency might be achieved during the regular school year.

Subjects

A much larger sampling is needed from which to choose subjects and also more extensive and accurate testing to insure accurate pairing. The ability to get accurate pairings was greatly misjudged by the experimentor. It would appear that band directors are not always able to judge accurately their students' playing ability solely on their daily performance in the music program. Also, the experimentor was not able to get useful information on the subjects' achievement or IQ scores as different test instruments were used at the two schools and one of the sets of data was

not current. The need to match the subjects' mental ability accurately when pairing is, in the opinion of the experimentor, as critical as the need to match playing ability. The two, in this instance, did not appear to be linked. Further, a better system of control over subject practice time is needed.

Instruction

Two significant changes are needed in this area to clean up the design of this experiment. First, the experimentor's personality should be divorced from his system by training other teachers in the use of the Kinesthetic Method and then assigning them the task of teaching the experimental group. Second, the control group teachers need more indoctrination so that their efforts will be more in line with the efforts of the experimental group teachers in terms of intensity of instruction in the area under investigation (i.e. finger technique). It would be desirable to match the teachers' abilities as carefully as those of the students'.

TABLE A - COMPARISON OF SEASHORE TEST SCORES AND PLAYING ABILITY BY PAIRS

Subject	Pitch Score	Pitch %ile	Rhythm Score	Rhythm %ile	Tonal Memory Score	Tonal Memory %ile	Experimentor's Rating of Playing Ability
1-A	47	98	29	97	30	99	1-A slightly better than 1-B
1-B	45	93	27	83	26	83	
2-A	44	89	27	83	29	97	Overall, players equal but 2-B slightly better in technique.
2-B	41	75	24	48	27	88	
3-A	34	39	25	60	22	59	3-B slightly better than 3-A.
3-B	36	49	23	38	15	22	
4-A	45	93	27	83	28	93	Players equal.
4-B	46	96	28	91	30	99	
5-A	47	98	25	60	26	83	5-B significantly better than 5-A. Consider this to be a mis-match.
5-B	48	99	29	97	30	99	
6-A	48	99	29	97	24	71	Players equal.
6-B	47	98	27	83	27	88	

All "A" subjects in the experimental group. Norms used were taken from Table 2B.

TABLE B - COMPARISON OF SUBJECTS BY PAIRS

Subject	Age	Sex	Instrument	Number Of Years Played
1-A*	14 yrs 7 mo	F	clarinet	4 yrs 7 mo
1-B	14 yrs 3 mo	F	clarinet	4 yrs 1 mo
2-A	14 yrs 5 mo	M	clarinet	3 yrs 9 mo
2-B	14 yrs 1 mo	F	clarinet	4 yrs 1 mo
3-A	13 yrs 7 mo	F	clarinet	4 yrs 1 mo
3-B*	14 yrs 3 mo	F	clarinet	4 yrs 1 mo
4-A	14 yrs 4 mo	F	clarinet	4 yrs 6 mo
4-B	14 yrs 3 mo	M	clarinet	3 yrs 0 mo
5-A	14 yrs 4 mo	F	clarinet	4 yrs 6 mo
5-B*	14 yrs 6 mo	M	clarinet	4 yrs 6 mo
6-A	14 yrs 7 mo	M	flute	5 yrs 0 mo
6-B	14 yrs 3 mo	F	flute	4 yrs 6 mo

All "A" subjects are the experimental group. The asterisk indicates wh subject of each pair the experimenter felt was the better player at the onset of the experiment. Where no asterisk appears, the experimenter c sidered the players to be of equal ability.

TABLE C - PERFORMANCE EVALUATION FORM

1= poor 5= excellent

Example	1	2	3	4	5
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

TABLE D - TEST EVALUATIONS BY EXPERTS

Subject Key	Example No.	Evaluation I	Evaluation II	Evalation III
2A - R	1	3	2	3
2B	2	2	3	2
5B	3	4	4	3
5A - R	4	4	4	3
2B - R	5	4	4	4
1B - R	6	2	1	1
2A	7	2	3	3
5B - R	8	4	4	4
5A	9	3	3	3
4A - R	10	4	4	5
3B	11	1	1	1
4B	12	4	3	3
4B - R	13	5	5	4
1B	14	2	1	1
3B - R	15	1	1	2
6B	16	4	5	4
3A - R	17	4	3	3
1A - R	18	5	5	5
1A	19	3	2	3
6A	20	4	4	4
4A	21	3	4	3
3A	22	2	2	2
6A - R	23	3	3	3
6B - R	24	5	5	4

TABLE E - COMPOSITE EVALUATION TEST SCORES

Subject	Test	Re-Test	Net
1-A	8	15	+7
2-A	8	8	0
3-A	6	10	+4
4-A	10	13	+3
5-A	9	11	+2
6-A	12	9	-3
TOTAL	53	66	+13

Subject	Test	Re-Test	Net
1-B	4	4	0
2-B	7	12	+5
3-B	3	4	+1
4-B	10	14	+4
5-B	11	12	+1
6-B	13	14	+1
TOTAL	48	60	+12

TABLE F - EXPERIMENTAL GROUP ATTENDANCE

Subject	Session No. 1	2	3	4	5	6	7	8
1-A					X	X		
2-A								
3-A								
4-A				X				
5-A					X	X		
6-A						X		

Subject	Session No. 9	10	11	12	13	14	15	16
1-A	X							
2-A		X						
3-A		X						
4-A			X	X	X			
5-A		X	X	X	X	X	X	
6-A				X	X	X	X	

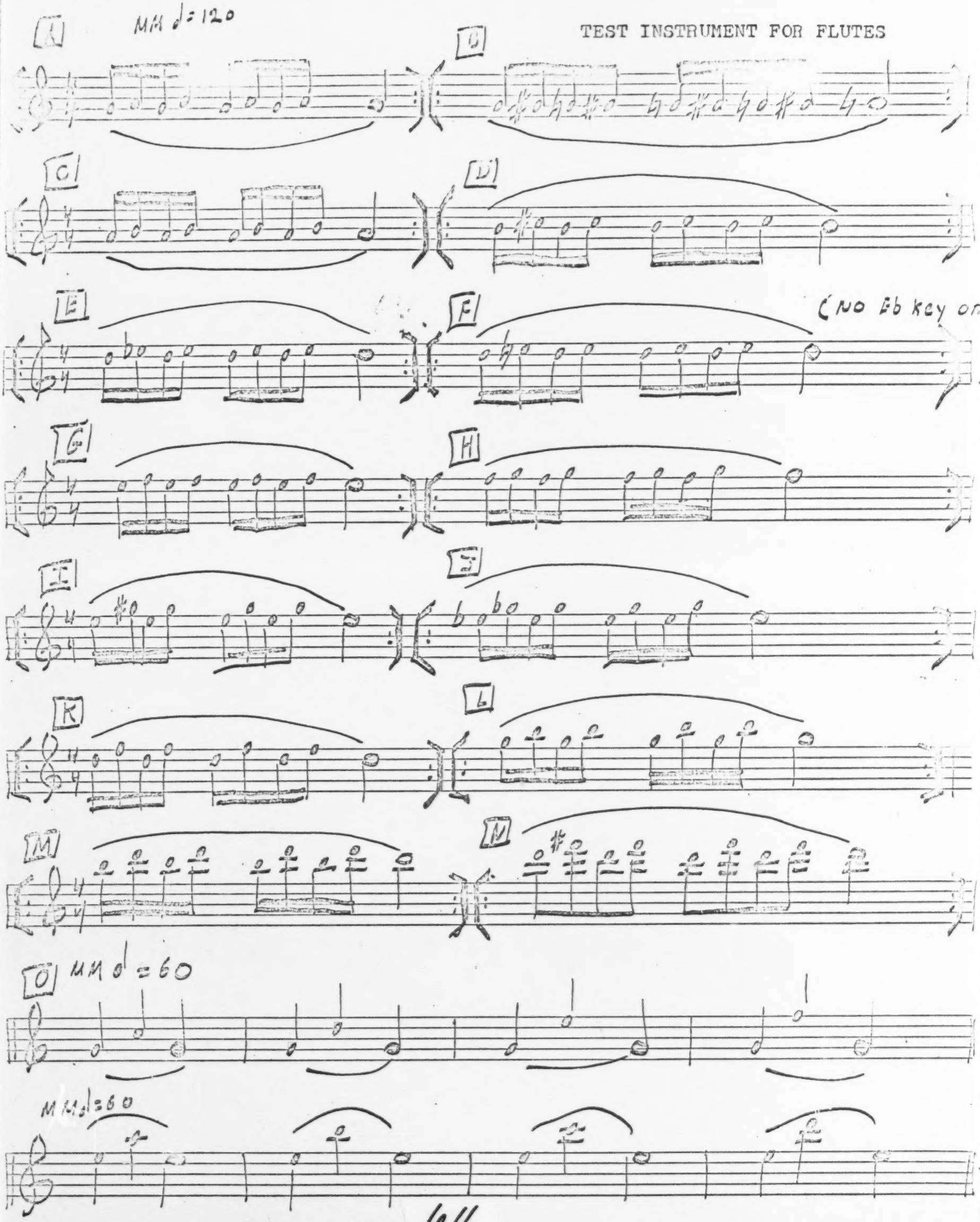
The X indicates an absence.

Subject 5-A's absence was caused by an un-scheduled family vacation and 6-A's absence was caused by his attendance at a music camp. The experimentor does not feel that 6-A's absence was overly critical as the musically stimulating environment of a music camp would tend to more than compensate for the sessions missed.

TABLE G - BUDGET EXPENDITURES

1.	Office supplies and postage.	$26.07
2.	Recording tape and take-up reels.	$26.10
3.	Fees for control group teaching.	$50.00
4.	Fees for experts used as evaluators.	$105.00
5.	Forty hours of secretarial help @$2.00 an hour.	$80.00
6.	Forty-five pages of Xerox copy at 7¢ a page.	$3.15
7.	Experimentor's fee for preparation of test instruments, preparation and edition of audio tapes, and test administration. Fifty three hours @$3.00 an hour.	$159.00
	TOTAL	$499.32

TEST INSTRUMENT FOR FLUTES



TEST INSTRUMENT FOR CLARINETS

A

MM ♩ = 120

B

C

D

E

F

(1X - L.H. c^2
2X - R.H. c^2)

H

I

J

K

L

M

N

MM ♩ = 60

O

GRANT NUMBER VII

SEED GRANT PROPOSAL

A SURVEY OF THE PRACTICES OF ELEMENTARY SCHOOL PHYSICAL EDUCATION IN THE NON-URBAN SCHOOL DISTRICT

PROPOSED BY:

Professor Ruth Callon

Professor Doreen St. Clair

Statement of the Problem

Physical education practices in the elementary school are often inadequate due to the lack of training of the classroom teachers in this particular discipline. In order to adequately plan a program to correct this a survey is needed to determine where is the weakness of their training.

Related Studies

A review of the related studies would indicate that the large city school system would be more likely to have someone who is charged with assisting in the elementary physical education program. As part of this study, a review of the literature for related programs and surveys is proposed.

Objectives of the Study

The first objective of this study will be to learn what present practices are in the non-urban school. By non-urban, this survey will mean school systems in cities of under 50,000 and in rural areas. In order to accomplish this two items will be attempted. As indicated above a survey of the literature will be undertaken to find similar studies and programs. A second line of attack will be a survey of school systems in the surrounding area. This will be accomplished through contact with both teachers and supervisors.

The long range goals will be the development of programs to alleviate this situation and testing of their effectiveness. However this would have to be part of later studies and work.

Procedure

School superintendents and principals would be contacted for permission to have the classroom teachers who are involved with elementary physical education to fill out a survey form. This survey form will be a checklist of the activities and skills and knowledge which would be used in an elementary physical education program. One form will be for primary and one for intermediate.

The content of the questionnaire will deal with such topics as:

(a) Correct way to jump

(b) muscle development and average age at which it occurs.

(c) types of games usable with different age children.

After tabulating the results, the areas of weakness would be identified and a proposed program developed.

Relationship to Long range studies

After a program was developed, it is hoped that a sufficiently large sample of these teachers might be involved in a re-training session. Following this these teachers would be surveyed again to determine what gains had taken place from the re-training. Teachers not in the re-training would also be resurveyed to find if gains had taken place in this group also.

BUDGET

1.	Phone Calls		$ 10.00
2.	Postage, letters		20.00
3.	Staff Time spent in organization, administration and interview 50 hours at $3.00 per hour		150.00
4.	Student help Time spent typing, filing and tabulating		100.00
5.	Mileage for contacting superintendents		
		Round trips	
	Greenwood	20 miles	
	Edinburg	20 miles	
	Whiteland	10 miles	
	Franklin	2 miles	
	Southwestern	30 miles	
	Nineveh - Hensley	30 miles	
	Center Grove	36 miles	
		148 miles @ .10 a mile	14.80
	2 additional trips		29.60
6.	Contact Principals - 180 miles - 2 times		36.00
7.	Mimeograph material		50.00
			$ 425.20

GRANT NUMBER VII

CURRENT PRACTICES AND PROBLEMS IN PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS IN SELECTED SCHOOL DISTRICTS IN CENTRAL INDIANA

Submitted by

Ruth Callon

Doreen St. Clair

Franklin College of Indiana

August 1970

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CURRENT PRACTICES AND PROBLEMS IN

PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS

IN SELECTED SCHOOL DISTRICTS IN CENTRAL INDIANA

CHAPTER I

INTRODUCTION

Statement of the Problem

Within the last ten years in Indiana, laws concerning the size of high schools and the tax base per student has resulted in the reorganization of school districts. In many cases two or three small districts have united to form one new district. These new districts have built a new high school, and the former high school building now houses a grade school. These former high school buildings usually contained a gymnasium as the pride of every Hoosier community is its basketball team. For the first time, these gymnasiums are available to grades one through six.

Another impact on elementary schools has been the new knowledge that movement activities are basic to all learning. Kephart and Godfrey[1] report:

> If motor exploratory patterns are lacking or are inadequate, the perceptual motor match must be similarily disturbed. Thus the motor problems of the child will be reflected in failure in perceptual learning. Since symbolic behavior and concept formation are dependent upon motor exploration, it follows that interference at the motor level will be reflected through a major part of the learning activities which the school will present to the child. Motor training and physical education thus become important to the total program of the public school.

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1. Kephart, Newell and Godfrey, Barbara: Movement Patterns and Motor Education (New York: Appleton-Century-Crofts, 1969) p. 17.

Robert Fleming (2), a leading curriculum and child development expert, suggests that remedial reading programs are not always the answer to reading problems, but that good physical education holds the key.

These two forces, the importance of physical education to learning and the availability of an area for physical education activities, led to a desire to learn what the current practices and problems are in physical education in the elementary schools in the local school districts.

The Problem: This report will seek to answer the following questions:

1. What is the extent and structure of physical education in the school districts studied?
2. What activities comprise the physical education program, and who teaches the activities?
3. What attitudes and knowledge in physical education does the classroom teacher possess?
4. What information and assistance in physical education does the classroom teacher desire?
5. What does the classroom teacher feel to be problems in physical education?

Source of Data:

The source of data was the material compiled from answers to a questionnaire (see Appendix) devised by the authors of the study. Ideas for the questionnaire were from the researchers experience in conducting a workshop for elementary teachers in a local school district (this district was not a part of the study).

This questionnaire was administered to five school districts in Johnson County--Center Grove, Edinburgh, Franklin Community Schools, Greenwood, and Nineveh-Hensley-Jackson: and two districts of Shelby County-Shelbyville Public

Schools and Southwestern. There were 22 elementary schools reporting and 223 classroom teachers filled out the questionnaires.

Method of Study

The method of study was to prepare the questionnaire so that it covered the areas in which information was sought. A preface page on each questionnaire gave an explanation of the purpose of the project and listed some benefits to the classroom teacher and her students that might accrue in helping do the study. Also, a phone number was listed in case any explanations were desired. Permission was secured from each school district superintendent and deliveries were made in the manner as the superintendent requested. Sometimes he wanted the entire number given to him for distribution, and in other cases, the delivery was made to each principal.

After one week's time the questionnaires were collected and tabulated according to each school. From this school districts were tabulated and then one complete tally sheet.

Definition of Terms

In this study, elementary schools refers to grades one through six..

Selected school districts in central Indiana refers to the five school districts of Johnson County and the two districts of Shelby County that were enumerated under the source of data.

Physical education is purposeful activity centered around the development, movement, and use of the body.

Directed physical education or directed play is that period of physical education activities which the class does as a group, or groups, under the instruction, direction, and supervision of the classroom teacher, physical educator, or other designated person.

Free play is the time in which each child may select and participate in any type of recreation or play activity as he desires that are permitted by the school.

Movement experiences, as the term is used in the questionnaire, is exploring and understanding how to effectively use one's body to best perform skills and locomotion.

Body mechanics, according to Kephart (9) is the application of physical laws to human performance and to the human body at rest or in motion.

Limitations of the Study

The following are limitations of the study:

1. The study includes only seven school districts and 22 elementary schools and this sampling is not as broad as it should be.
2. Several parts of the questionnaire were not answered, and might tend to distort slightly some of the conclusions.
3. The instrument (questionnaire) was not pre-tested and some weaknesses exist in it.
4. In some questions in which "write-in" answers were sought difficulty arose in attempting to analyze and categorize the answers.
5. The instrument was intended to be an instructional and motivational device as well as that of an informational seeker. For example, the inclusion of the principles of movement was to make teachers aware of their existence. Therefore, as a statistical device it may be lacking.

CHAPTER II

RELATED STUDIES

It is very difficult to find research in which the physical education program of an elementary school has been evaluated. If a school district has done an evaluation it does not publish the results but uses them to determine areas of weakness.

In 1969, the State Board of Health of Indiana and the State Department of Public Instruction published the Indiana Physical Education Score Card for Elementary and Secondary Schools. This was meant to be a self evaluation instrument. Therefore, the results obtained by school systems using this Score Card are not open to public observation. (See Appendix for a copy of the Score Card).

A study by Rosabel Koss (10) in 1965 of the physical education of elementary schools in New Jersey is similar to what was sought in this report. Koss developed a checklist and then evaluated 450 school districts. The 13 school districts which fulfilled the criteria most as set up in the checklist and the 13 school districts which fulfilled the criteria least were then compared. The results of her study will be listed as the research relating to each question in the problem will be examined.

The Extent and Structure of Physical Education in the Elementary Schools

Koss (10) discovered that 88.9% of the schools studied had physical education as a part of their curriculum. Most schools reported 150 minutes of physical education per week. 83% of the schools had either a gymnasium or multiple purpose room. 82.5% of the school districts could supply balls, bats, and other expendable equipment. In visiting the schools, Koss found that programs ranging from free

play experience on the playground to instructional programs taught by a special teacher in the gymnasium.

In an article by Charles Wilkinson (18) it was reported that fewer than five per cent of the nation's elementary schools have gymnasiums.

Bonnie Prudden (12) states that in her children's elementary school in a residential suburb of New York City, there was not a single piece of gymnastic equipment, and the mats had not been off the walls for years. The teacher in charge of the physical education class was knitting. Through research Mrs. Prudden learned that each child had about thirteen minutes of actual physical movement per week.

Schrader and Hallstrom (15) sent out questionnaires to 1,200 superintendents and elementary principals throughout the United States and from these they reported that the larger the school system the more likely indoor play facilities are provided. They report that nine out of ten children in larger systems have a regularly scheduled physical education period, while in the smaller systems the ratio is five and one half to ten.

The Physical Education Activities Being Taught and By Whom

Rosabel Koss (10) found in the New Jersey schools that one third of the districts did not have a special physical education teacher. Thirty per cent of grades one through six were taught by the classroom teacher and the special teacher. The regular classroom teacher was more likely to be responsible for the physical education in the primary grades.

Carl Troester (17) reported that the classroom teacher was responsible for teaching physical education activities in 80% of the nation's elementary schools.

However, a later study by Elsa Schneiger (14) in 1959 reported the physical education programs were the direct responsibility of the classroom teacher in 71% of the elementary schools in the nation.

As far as activities are concerned, Koss (10) found that where the services of a special teacher were not available, the programs were largely games and relays.

John Puckett (13) in his study reemphasizes that a varied program of physical activities should be planned. This should include low organized games, relays, basic sport skills, rhythms, self testing activities, singing games, stunts and tumbling, and movement education.

In a report by Lyle Highfill[2] it states:

> Physical fitness in general and physical education of school children in particular are receiving increasing attention in America today. But when it comes to providing physical education activities in school and on the playground , many teachers--particularly those in the elementary grades--are often on their own. "What do my children actually need in the way of physical education activities?" asks the none too athletic teacher. "If I want to start a program for my pupils, how should I begin?"

The general conclusion seems to be that most classroom teachers are responsible for the physical education instruction of their students and are unsure as to what activities to include in a program.

Knowledge and Attitudes Possessed by the Classroom Teacher

The attitudes and knowledge of the elementary classroom teacher, who is responsible for the physical education, has a bearing on what activities are taught. Koss (10) reports there appears to be confusion concerning the objectives of physical education in the elementary schools. Some districts view the program as a recess period where children had opportunity to rid themselves of excess energy and come back to the classroom refreshed and more able to learn.

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2. Highfill, Lyle: "Physical Education, Games, and Exercises to Keep Your Child Fit" Grade Teacher, Vol. 85 (September 1967) p. 51.

Most classroom teachers see physical education as an opportunity to learn to take turns and share. Margaret Miller (11) reports that teachers who lack "know-how" in physical education ignore the natural play of children, i.e. running, jumping, racing, competing, and fails to make this a part of the physical education curriculum. Their basic concern, according to Mrs. Miller, is with the group social learnings than with their physical development.

Actually, the elementary classroom teacher would be the first to admit that her knowledge and understanding of physical education is weak. In the November 1967 issue of Grade Teacher, an anonymous teacher wrote:

> I'm not particularly adept at physical activities (actually, I dislike most organized sports) and I really can't teach children how to throw or catch a football, shoot baskets, or swing a bat! But I would like to do more on the playground than make sure nobody gets hurt. What help can you suggest?

Jerry Thomas (16) in his work on a doctoral thesis, reports that elementary schools asks a classroom teacher, who is inadequately physically educated and unmotivated to provide leadership in physical education activities. He/she often lacks the skill to demonstrate or teach skills. He reports that their classes often become a supervised free play period.

Information and Assistance in Physical Education Desired by the Elementary Classroom Teacher

Most elementary classroom teachers, who have the responsibility of physical education, are attempting to supplement their knowledge and understanding in the field. Koss (10) reports that inservice training, at least once a year, was provided in 35.6% of the districts studied in New Jersey. Staff meeting for those who taught physical education were held in 57.7% in the school districts .

John Puckett (13) states that the ways classroom teachers should attempt to improve themselves professionally in physical education are by reviewing and studying publications in elementary physical education; taking additional courses in physical education; attending conferences and workshops; participating in inservice education; working closely with physical education special teachers; and consulting with superior or outstanding secondary physical educators.

The Classroom Teachers Problems in Physical Education

The problems of the elementary classroom teacher responsible for teaching physical education are many and varied. Of course, the one already discussed concerning sufficient background and knowledge in physical education is paramount.

Koss (10) reports that the multiple purpose rooms, which serve as cafeteria, music room, and auditorium, as well as a place for physical education, present problems in scheduling and extra custodial work in moving furniture.

Margie Hanson, Elementary Education Consultant for the American Association of Health, Physical Education, and Recreation, states:[3]

The existing problems of elementary physical education are:

1. A failure to understand the tremendous opportunity we have, to help children in their total development through experiencing good movement in a variety of situations.

2. A critical shortage of elementary physical educators.

3. Weak preparation with a limited image of games and activities and an over emphasis on how to teach and organize activities.

4. A need for an enlightened inservice training program.

5. Heavy staff schedules and teaching loads.

6. Children standing in long lines and waiting turns to be "It".

7. Adult size and insufficient equipment.

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3. Hanson, Margie: "Elementary Physical Education Today", Promising Practices in Elementary School Physical Education. Publication of the American Association for Health, Physical Education, and Recreation. (Washington. 1968) p. 4-5.

8. Weak curriculums based on:

    1. "Little games and little dances for little people."

    2. A watered down high school program.

    3. Programs consisting daily of exercises.

CHAPTER III

RESULTS OF THE STUDY

The results of the 223 questionnaires from the seven school districts and the 22 elementary schools are listed under the five questions the study sought to answer.

I. What is the extent and structure of the physical education program in the elementary schools of the districts studied?

1. All schools reported have either a gymnasium or a multiple purpose room.
2. Only 28.3% of the classes reporting have any scheduled directed physical education.
3. Of this number (28.3%) 57.1% have one physical education period per week; 25.6% have it twice a week; 7.4% have it three times a week; and 15.9% have it daily.
4. 13.9% have directed play at recess or noon.
5. The following designated equipment is available to the boys and girls in the 223 reporting classes: (The listings are in percentages using the 223 as a base.)

96.4%	balls	22.4%	bean bags	1.8%	deck tennis rings
83.4%	ropes	81.1%	record player and records	10.8%	balance beams
57.8%	bats				

6. No grade is given for the scheduled directed physical education period; however, one teacher reported that physical education is a consideration in determining the grade for health.

7. The table below lists information pertinent to the school districts:

School Systems	No. Reporting	No. with Directed P.E.	Ave. Minutes of P. E. per Week per pupil	No. with Dir. Play at Recess
Center Grove	23	0	0	0
Edinburg	25	0	0	0
Franklin Comm.	48	13	58	11
Greenwood	49	13	60	0
Nin.-Hens.-Jack.	33	15	108	20
Shelbyville	27	22	34	0
Southwestern	18	0	0	0

8. Of the 63 classes that have a scheduled directed physical education period, they report the dress for class is as follows: 50.8% pupils wear regular school clothes, plus gym shoes; 26.7% pupils wear regular school clothes; 22.5% of boys wear regular school clothes, girls wear shorts.

9. 92% of the 63 reporting state that a pupil may be excused from physical education if a parent writes a note requesting it.

II. <u>What activities comprise the physical education program and who teaches the activity</u>?

This part of the questionnaire was answered only by those teachers who had a scheduled directed physical education period.

Because who teaches the period has a direct bearing on what is taught, the question will be answered in reverse order.

1. Of the 63 classrooms that have a directed scheduled physical education period:

   58.7% are taught by the classroom teacher

   15.7% are taught by a physical education teacher

   12.3% are taught by selected pupils

   12.3% are taught by others--principal, another classroom teacher adept in physical education, etc.

2. Of the 63 classrooms that have a scheduled directed physical education program, the following per cent of them have the designated activities:

   100% have simple games

   88.9% have relays

   70.8% have sport skill activities

   60% have movement experiences and body mechanics

   43.2% have rhythmic activities

   30.1% have apparatus, stunts, and tumbling activities

This would tend to agree with Koss (10) that if the classroom teacher is responsible for physical education, that games and relays constitute the majority of the program.

III. <u>What attitudes and knowledge in physical education does the elementary school classroom teacher possess</u>?

This part of the questionnaire was answered by all the classroom teachers, whether they had a directed physical education period or not.

1. To discover what the classroom teachers think the most important objectives of physical education are, they were to mark with (M) those two objectives (out of eight listed) they feel to be the most important. Below these objectives are listed in order as the teachers ranked them with the tallies each objective received listed beside it:

121 (1) to increase the ability to get along with others, share, take turns, etc.

59 (2) to give children an opportunity to get rid of excess energy.

57 (3) to enjoy wholesome recreation and activity.

49 (4) to give children a rest between academic subjects.

32 (5) to engage the children in big muscle activity so they will develop organic strength and vigor.

25 (6) to understand the principles of movement and to control and manage one's body.

19 (7) to learn and understand rules of games and sports.

0 (8) to use a reward for good behavior and good classroom work.

This would tend to reinforce Miller's study in which she states that classroom teachers' basic concern is with the social learnings.

2. Each classroom teacher could only select two as most important but could check as many as he/she believed to be an objective of physical education. Counting each (M) as a tally and each ( ) as a tally, listed below are the objectives and the number of tallies:

199 (1) to increase the ability to get along with others, share, and take turns.

178 (2) to give children the opportunity to get rid of excess energy.

166 (3) to give children a rest between academic subjects.

160 (4) to enjoy wholesome recreation and activity.

143 (5) to learn and understand rules of games and sports.

127 (6) to engage the children in big muscle activity so they will develop organic strength and vigor.

97 (7) to understand the principles of movement and to control and manage one's body.

25 (8) to use as a reward for good behavior and good classroom work.

3. As stated in the introduction chapter, the questionnaire was also designed as an instructional and motivational instrument. Question #15 Which of the following movement principles would you say the children in your grade understand:--was included to teach the classroom teachers that there were principles of movement, and to motivate them to learn more about them. It was interesting to note that out of the 223 classroom teachers the following percent of them thought the children of their classroom understood these principles of movement:

18.7% (1) The whole body concept that most skills are done easier if the whole body is used. (Ex.: a child does not throw with just his arm, but rotates his body and uses his back.)

14.3% (2) The follow-through concept that follow-through in the direction of a throw or hit will increase force, aid direction, and prevent injury.

13.9% (3) The principle of opposition, if one throws with the right hand, the left foot should be forward.

11.2% (4) The weight transfer principle, that in batting, hitting, throwing, etc., the child will have more success if he transfers his weight from back foot to front foot as he does the skill.

6.3% (5) The center of gravity principle, that the lower the body the quicker and easier it can move and change direction.

2.7% (6) The distance principle that in throwing any object for greatest distance, it should be released at an angle of 45 degrees to the horizontal.

4. Most physical educators agree that handicapped boys and girls need to participate in physical education activities. Depending upon the handicap, this may be handled by having the child participate with the other children as much as possible, and then modifying the activities or creating special ones so he does take an active participation.

The classroom elementary teachers reported doing the following with their handicapped students:

135 answered the question--The handicapped boy or girl usually:

77.1% plays with others 16.3% sits out 6.6% has special activities

This indicates that 22 teachers who have their handicapped boy or girl--just sitting out--need to be made aware that there are many activities this child could and should be doing.

5. Physical education can be integrated with many other subjects in the school curriculum. Physical education activities can reinforce learnings and skills in these other areas. The elementary classroom teacher reported that they are using these opportunities in the following ways:

(Percentage based upon 223)

48.4% health and physical fitness

41.7% music and rhythm activities

35.0% arithmetic and counting games and scoring

9.9% social studies and folk dancing

8.9% science and movement principles

IV. What information and assistance in physical education does the elementary classroom teacher desire?

If the preceding results have been discouraging, the following statistics tend to be uplifting.

1. 192 teachers answered the question--Would you be interested in supplementing your background in physical education?

65.1% answered yes

2. According to school districts and the number who answered the question, the percentage in each school district who wanted to supplement their background in physical education were:

Center Grove	39.1%	Greenwood	63.3%
Edinburg	44.0%	Nin.-Hens-Jackson	63.9%
Franklin Community	68.8%	Shelbyville	48.1%
		Southwestern	38.8%

3. Of the 192 teachers who wanted to supplement their background in physical education, they were interested in doing it in the following ways:

28.9% wanted a one day workshop

16.8% wanted a 2-3 day workshop

20.8% wanted an inservice training session to be held one afternoon a week for six weeks

20.8% wanted a two weeks workshop with credit

12.7% wanted a four week's workshop with credit

4. 68.1% of the 192 teachers wanted mimeograph materials on physical education.

5. The elementary classroom teachers wanted assistance in the following areas: (The teachers could check as many of these as they desired therefore only the tallies will be recorded)

___99___ activities for supplementing class room work with physical activities

___77___ ideas for large groups

___72___ activities in the gymnasium

___71___ classroom activities (rainy day physical education activities)

___52___ teaching techniques in skills

___52___ movement principles

****

V. <u>What does the elementary classroom teacher feel to be problems in physical education?</u>

1. The teachers answered the question of what problems have you had or do you foresee in having a scheduled directed physical education class with the following percents (based on 223)

___50.7%___ availability of the gymnasium

___27.3%___ feelings of inadequacy of the classroom teacher in physical education activities

___26.4%___ equipment and supplies

___20.6%___ lack of resources, ideas, and suggestions for activity

Write in answers were:

___6.1%___ lack of time

___3.6%___ lack of physical educator

Other write in answers mentioned only one or two times were: lack of interest; lack of planning time; size of group ; parental disapproval; lack of time to change for physical education.

CHAPTER IV

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

The study of 223 elementary classroom teachers in seven school districts and in 22 elementary schools in central Indiana was made to determine the current practices and problems in physical education in the elementary schools.

This study was undertaken because two recent developments seemed to have important implications for elementary school physical education. These developments were the reorganization of small school districts which gave elementary schools availability of a gymnasium or multiple purpose room and the new research concerning the importance of physical education activities as the basis for learnings in other areas.

The results of the study are summarized as follows:

1. All 22 elementary schools had either a multiple purpose room or a gymnasium.
2. Only 28.3% of the classrooms had a scheduled directed physical education period. Three of the seven school districts had no scheduled physical education at all.
3. Of the 63 classes out of the 223 who had a scheduled physical education period, slightly over half (57.1%) had it only once a week. The number of minutes per week per pupil varied from 34 minutes (average) to 108 minutes.
4. Of the 63 classes that did have a scheduled physical education period, 58.7% were taught by the classroom teacher; while only 15.7% were taught by a physical educator.

5. The activities of the scheduled physical education classes consisted primarily of games, relays, and sports skills in that order. Rhythmics and stunts, tumbling and apparatus were taught less frequently.
6. There was a great lack of knowledge by the classroom teacher as to what the objectives of physical education were. The elementary teachers ranked the two most important objectives in this order: (1) to increase the ability to get along with others, share and turns, and (2) to give children the opportunity to get rid of excess energy.
7. Knowledge and understanding of the field of physical education was also lacking by the elementary teachers. Understanding of movement principles seemed to be weak and the fact that physical education activities could re-inforce skills and knowledge in other subjects of the curriculum seemed to be lacking.
8. The elementary classroom teachers, or at least 65.1% of them, want to supplement their background and knowledge in physical education. In analyzing, it appears that the school districts having the most scheduled physical education were those most interested in increasing their knowledge, while those who had no physical education were reluctant to learn.
9. The classroom teachers listed the availability of the gymnasium as the primary problem in elementary physical education; followed by a feeling of inadequacy of the classroom teacher to teach physical education activities as second; and the lack of equipment and supplies as third.

The <u>conclusions</u> are as follows:

1. Though each school had an area in which physical education activities could be held, either a gymnasium or multiple purpose room, the classroom teachers felt

the biggest problem was that of availability of the gymnasium or multiple purpose room. The conclusion seems to be that these rooms are being used for other school functions that is preempting physical education activities.

2. The elementary schools in this area are not hiring physical educators, but are leaving the responsibility of physical education to the classroom teachers.

3. The only way that elementary physical education is going to improve is to make the classroom teachers aware of its importance and to help them understand what a good physical education program is and how to teach it.

4. The way to accomplish this is by using all superior teachers in physical education--at all levels, elementary, secondary, and college--to work with administrators of the school districts to provide instruction for those elementary teachers who wish to supplement their background in physical education. The methods used may be what is deemed best for that school or district--inservice training programs, literature, workshops, etc.

After making the study the recommendations are as follows:

(1) A study be made to determine why gymnasiums or multiple purpose rooms of the schools are not available for physical education activities.

(2) A copy of the study be given to the superintendents of each school districts that participated in the study, and that a copy of the results be given to every school principal of the schools participating with the offer to do an inservice training session with the teachers who desire one.

(3) An effort be made by all persons or groups (P.T.A., members of the Indiana Association for Health, Physical Education, and Recreation, Association for Children with Learning Disabilities, etc.,) who are interested in good physical education programs in the elementary school to promote through all possible channels an understanding of the importance of physical education to the development and learning of the child.

(4) Similar studies should be made in other parts of the state to determine what are the practices and problems in physical education in other localities and throughout the state.

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Dear Teacher,

We realize it is very "nervy" of us to ask you to take time out of your busy days in May to fill out a questionnaire. However, in the long run, we think it will benefit you and your students. We have received a small "seed grant" to determine what are the current practices and problems in elementary physical education in some of the elementary schools in our immediate area. After determining this, it is our purpose to aid you in whatever ways you deem best and are feasible.

We appreciate your co-operation and the co-operation of your administrators. If you have any questions regarding any of the items of the questionnaire, please feel free to call us for clarification. Our number is 736-8441, extension 163.

Sincerely,

Ruth Callon
Doreen St. Clair

Mrs. Ruth Callon
Assoc. Prof of
Physical Education

Mrs. Doreen St. Clair
Instructor in Physical
Education

RC/ls

Name _____ School _____

School System _____ Grade _____

Please mark, fill in, or answer in the appropriate blanks; if none of the answers applies, please comment.

1. Do students have a scheduled directed physical education period?

   _____ yes _____ no

   If yes, _____weekly; _____twice a week; _____ three times a week

   Time for each period _____

2. Recess periods are _____directed play

   _____free play

3. Noon hours are _____directed play

   _____free play

4. Does your school have a gym? _____yes _____no

5. Does your school have a multiple purpose room in which physical education activities may be carried on? _____yes _____no

6. List problems involved in using the facilities mentioned in questions 4 and 5.

<u>If there is a scheduled physical education period or directed play at recess or noon, please answer questions 7 through 12</u>

7. The activities are selected, led, and organized by:
   _____classroom teacher _____selected pupils _____others (specify)

8. The activities include: (check as many as apply)

   _____movement experiences and body mechanics

   _____rhythmic activities

   _____apparatus, stunts and tumbling

   _____simple games

   _____relays

   _____sports skills activities

9. The class is taught:

_____all together _____skill groupings

_____girls divided from boys

10. The student is excused from participation:

_____if he asks to be _____a note from parent

_____doctor's excuse _____other (please specify)

11. The student's attire is:

_____regular school clothes _____regular school clothes, plus gym shoes

_____boys wear regular school clothes, girls wear shorts and blouses

12. A grade in physical education:

_____is given _____is not given

All teachers please answer the following questions concerning activities whether they have free play recesses, directed play recess, or scheduled physical education periods.

13. The objectives of the activity periods are:
(Please check each that apply and mark (M) on the two you feel are the most important)

_____to give the children an opportunity to get rid of excess energy

_____to give children a rest between academic subjects

_____to use as a reward for good behavior and good classroom work

_____to engage the children in big muscle activity so they will develop organic strength and vigor.

_____to enjoy wholesome recreation and activity

_____to learn and understand rules of games and sports

_____to understand the principles of movement and to control and manage one's body

_____to increase the ability to get along with others, share, take turns, etc.

14. Which of the following sports skills do the children seem to learn:

_____catching _____kicking _____tagging _____shooting

_____throwing _____jumping _____batting.

15. Which of the following movement principles would you say the children in your grade understand:

_____The principle of opposition, if one throw with the right hand the left foot should be forward.

_____The whole body concept that most skills are done easier of the whole body is used. (Ex. a child does not throw with just his arm, but rotates his body and uses his back)

_____The weight transfer principle, that in batting, hitting, throwing, etc., the child will have more success if he transfers his weight from back foot to front foot as he does the skill.

_____The center of gravity principle, that the lower the body the quicker and easier it can move and change direction.

_____The follow through concept that follow through on the direction of a throw or hit will increase force, aid direction and prevent injury.

_____The distance principle that in throwing any object for greatest distance, it should be released at an angle of 45 degrees to the horizontal.

16. The handicapped boy or girl usually:

_____plays with the others _____sits out _____has special activities

17. Are physical education activities or play activities done in the classroom

_____yes _____no If so what?

18. Are physical education activities used to supplement classroom work?

_____social studies and folk dancing

_____arithmetic and counting games or scoring

_____science and movement principles

_____music and rhythm activities

_____health and physical fitness

19. What equipment is available to you and your class?

_____balls _____bean bags _____deck tennis rings _____bats

_____ropes _____phonograph and records _____balance beam

20. What problems have you had or do you foresee in having a scheduled directed physical education period?

_____Availability of gymnasium

_____equipment and supplies

_____parent disapproval

_____feeling of inadequacy of the classroom teacher in physical education activities

_____lack of resources, ideas, and suggestions for activities

_____others--please list

21. Would you be interested in supplementing your background in physical education?
_____yes _____no

If yes, would you be interested in:
_____a one day work shop

_____a 2 week work shop with credit

_____a 2-3 day workshop

_____4 week workshop with credit

_____inservice training session one afternoon a week for 6 weeks

_____mimeograph materials

22. Which of the following areas would you like assistance:

_____classroom activities

_____activities in the gym

_____ideas for large groups

_____ideas for supplementing classroom work with physical education activities

_____movement principles

_____teaching techniques in skills

Additional comments:

Grant Number VIII

CORD GRANT PROPOSAL

Implementing Research Techniques in the Teacher Preparation Program

Submitted by

Dr. Thelma Tsismanakis & Dr. Leland Erickson
Department of Education

Franklin College

Funds from this grant will be used to conduct a pilot study to determine the best procedures for developing in classroom teachers the appreciation and capabilities necessary for carrying on functional research in classroom situations.

Results of the study will be used for further improvement of the Franklin College teacher education program by making actual classroom research an integral part of the student teaching experience.

Since the Assistant Superintendent of the Franklin Community School Corporation had expressed a strong interest in having the college and local public schools cooperate in research beneficial to both parties involved, the present study has been discussed with the superintendent and has received his full and complete approval and encouragement. It is hoped that the results of the study may be used to develop a more extensive research project which would be conducted through the joint efforts of the college and the local elementary schools and thus provide a learning experience for both college student teachers and experienced elementary classroom teachers.

The Franklin College elementary education major is in an excellent position to profit from an instructional experience of this type since the program provides for continuing professional development by actively involving the student in the public school classrooms during three of his four years of preparation. These experiences are provided in conjunction with the introductory course in education during the freshman or sophomore year, in the methods courses during the junior year when the student spends one-half day of each week in the classroom, and during the senior year in the student teaching block which includes one or two days of each week in the classroom during the first half of the semester and full time involvement during the second half of the semester.

The pilot study will focus on the designing and conducting of research projects; however, in order to facilitate the study and to provide guidance and additional learning experiences for the student participants, the research projects will involve the use of audio-visual equipment, such as the radio, tape recorder, record player, film strip and slide projector, and camera.

The study will involve student teachers, predominantly, since they have a continuous and extended period of time in the classroom; however, selected juniors will also be involved for the purpose of testing possibilities of initiating the program at this level. Ten student teachers will be participants in the program during the current semester. Additional student involvement during the summer session will be determined by the enrollment in the summer education courses.

The general procedure for the pilot study will include the formation of teams, composed of two or three student teachers with assignments in the same school. Each team will design a research project for the purpose of gathering information which will suggest better teaching techniques. The projects will include the use of audio-visual equipment. Written and audio-visual reports of the results will be required.

More detailed steps in the procedure involve the following:

1. In the college classroom the director of the study and the students will explore thoroughly the values of and the techniques for (a) conducting research in the public school classrooms and (b) using audio-visual equipment in the classroom. Intensive preparation at the beginning of the project will be followed by seminars whenever the need arises during the remainder of the semester.

2. Each team of two or three students will be required to work together in designing an experiment for the classrooms to which they have been assigned.

Each research project will involve the use of one or more pieces of audio-visual equipment. Two weeks will be suggested as the minimum length of time for a worthwhile experiment.

3. Illustrations of the types of questions which the students might attempt to answer include:

(a) Can the ability of the child to listen critically, for accuracy, for appreciation, and for creativity be improved through use of the radio and record player?

(b) Can the child's interest in world affairs be increased by daily listening to news broadcasts?

(c) Would a continuous flow of music into the classroom have any effect upon the attitudes and behavior of the children?

(d) What effect would different types of music have upon the child's speed and accuracy in mathematical computation or in spelling tests?

(e) What effect would different types of music have upon the total discipline in the classroom and especially upon individual behavior problems?

(f) How can the camera and tape recorder be used to help bring out creativity in children?

(g) How can the camera be used effectively for purposes of motivation in different subject matter areas?

(h) How can the tape recorder be used most effectively in helping children break bad habits in their speech?

(i) How can the tape recorder be used to provide more time for teachers to work with individual students?

4. Students will receive assistance in designing and conducting acceptable projects through individual conferences with the director of the study and through group discussion in the seminars. If necessary, other Franklin College faculty members will be invited to serve as consultants.

5. Each team will complete a written report of the experiment. In addition, the team will be required to prepare a summary of the study through the preparation of a series of slides and a taped commentary to accompany the slides. The reports will be collected by the director for evaluation

purposes, for use in designing a more permanent type program, and for use with future elementary education majors.

6. The evaluation of the pilot study will include observation of any changes in attitudes toward research and any improvement in ability to conduct classroom research. A special form, constructed for this purpose, will provide information concerning attitudes of both student teachers and cooperating teachers. A follow-up study of the participants during their first year of teaching will indicate the students who demonstrate an interest in and the ability to carry on research in the classroom. This will provide valuable data for designing the more extensive research which may be done in cooperation with the Franklin Community School Corporation.

It is anticipated that this pilot study will not only provide the basis for further upgrading the Franklin College teacher preparation program but will also result in the following direct and indirect benefits for both student teachers and cooperating teachers:

1. Arouse a lasting desire to search for new and better techniques as a means of improving ability to teach.

2. Develop the appreciation and capabilities essential for conducting research in the classroom.

3. Encourage the use of audio-visual equipment and techniques in the classroom.

4. Inspire the individual to become a more creative type teacher in all areas.

Budget

Audio-visual equipment	$200.00
Director of study	200.00
Travel	75.00
Secretarial help, supplies, etc.	25.00
	$500.00

GRANT NUMBER VIII

IMPLEMENTING RESEARCH TECHNIQUES

IN THE

TEACHER PREPARATION PROGRAM

A Report on a Pilot Study

Submitted by

Dr. Thelma Tsismanakis

&

Dr. Leland Erickson

Franklin College
Franklin, Indiana

Introduction

This pilot study was conducted at Franklin College in an effort to determine the best procedures for developing in classroom teachers the appreciation and capabilities necessary for carrying on functional research in classroom situations. The study was focused on the designing and conducting of research projects involving the use of audio-visual equipment, such as the radio, tape recorder, record player, filmstrip and slide projector, and camera.

The Franklin College elementary education major is in an excellent position to profit from an instructional experience of this type since the teacher preparation program provides for continuing professional development by actively involving the student in the public school classrooms during three of his four years of preparation.

These experiences are provided (a) in conjunction with the introductory course in education during the freshman or sophomore year, (b) in the methods courses during the junior year when the student spends one full day of each week in the classroom, and (c) during the senior year in the student teaching block which includes one or two days of each week in the classroom during the first half of the semester and full time involvement during the second half of the semester.

Since the project required the complete cooperation of the local public school system, the study was discussed with the assistant superintendent of the Franklin Community School Corporation and received his full and complete approval and encouragement. The assistant

superintendent had previously expressed a strong interest in having the college and local public school system cooperate in research beneficial to both parties involved. This project fulfilled the requirements since it provided a valuable learning experience for both college student teachers and experienced elementary classroom teachers.

Procedure

Since student teachers have a continuous and extended period of time in the classroom, ten students already enrolled in the student teaching program during the semester were selected as participants in the pilot study. The next step required the formation of five teams consisting of two student teachers in each team. All student teachers and all supervising teachers, with the exception of two teachers located in the Columbus School System, were then requested to respond to an attitude inventory, constructed especially for this pilot study, before any discussion of the planned research took place. A copy of the attitude inventory may be found under Attachment #1 and a copy of the answer sheet under Attachment #2.

In the college classroom the director of the study and the students explored the values of and the techniques for (a) conducting research in the public school classroom and (b) using audio-visual equipment in the classroom.

Illustrations of the types of questions which the student might attempt to answer were presented and discussed. Students were encouraged

to present additional suggestions after the following possibilities were given by the director of the study:

(a) Can the ability of the child to listen critically, for accuracy, for appreciation, and for creativity be improved through use of the radio and record player?

(b) Can the child's interest in world affairs be increased by daily listening to news broadcasts?

(c) Would a continuous flow of music into the classroom have any effect upon the attitudes and behavior of the children?

(d) What effect would different types of music have upon the child's speed and accuracy in mathematical computation or in spelling tests?

(e) What effect would different types of music have upon the total discipline in the classroom and especially upon individual behavior problems?

(f) How can the camera and tape recorder be used to help bring out creativity in children?

(g) How can the camera be used effectively for purposes of motivation in different subject matter areas?

(h) How can the tape recorder be used most effectively in helping children break bad habits in their speech?

(i) How can the tape recorder be used to provide more time for teachers to work with individual students?

The members of each team were required to work together in designing experiments suitable for the classrooms to which they had been assigned. Each research project involved the use of one or more pieces of audio-visual equipment and required a minimum period of two weeks for completion.

Students received assistance in designing acceptable projects

through individual conferences with the director of the study and through group discussions in the seminars. The research designs were also discussed with the supervising classroom teachers who gave valuable assistance and encouragement to the student teachers. Frequent conferences with the director of the study and the classroom supervisors enabled the student teachers to make any necessary changes in the original design and carry the projects through to completion.

Each student completed a written report of the experiment. In addition, all teams prepared summaries of their studies through a series of slides and taped commentaries to accompany the slides. The reports were collected by the director for evaluation purposes, for use in designing a more permanent type program, and for use with future elementary education majors.

After the completion of the research projects and the reports, both the student teachers and the supervising teachers were again requested to respond to the same attitude inventory.

Funds received for the pilot study were used to cover the cost of audio-visual equipment, film, processing of the film, etc. A summary of the budget may be found under Attachment #3.

Results and Discussion

Brief summaries of the research conducted by the student teachers in the classroom have been included. Each summary contains the purpose, procedure, and results of the study.

The five research projects are as follows:

1. Purpose: To discover if first grade children's interest in and knowledge of world affairs can be increased through daily listening to news broadcasts.

   Procedure: A very simple test concerning world events was given at the beginning and at the end of the project. Each day for two weeks the children listened to tape recordings of news broadcast. A tape recording was used so that the researchers could select the most appropriate news items for their purpose and so that the length of the listening period could be controlled.

   Results: The college student researchers found that, in general, the news broadcasts were too difficult for the first grader to comprehend fully. The use of discussions and pictures was necessary in order to bring the information down to the level of the children. Even though the second test results showed little increase in knowledge of world affairs, it was found that during the two weeks period the children did appear to become more aware of the news and its effects upon their daily lives. This seemed to be largely a result of their class discussions of the news which they had heard on the tape recording.

2. Purpose: To discover if children would listen more attentively to directions given on a tape recorder rather than by the teacher.

   Procedure: During the first week directions for the spelling lessons were given by the student teacher. Questions were

answered by the teacher whenever requested by the children. During the second week children listened to similar directions on the tape recorder. No questions were answered by the teacher.

Results: Children listened more carefully to the tape recorder during the second week than they had listened to the teacher during the first week. The college students recognized that the fact that the children were told on the recorder that directions would not be repeated probably influenced greatly the closer attention given to the tape recording.

3. Purpose: To compare the results of spelling tests given by the teacher and by a tape recording in grades three and a combination of five and six.

   Procedure: Over a two weeks period spelling tests of comparable difficulty were given on alternate days by the teacher and by use of the tape recorder.

   Results: For the third grade children the tape recorder proved to be more effective one hundred percent of the time, but in the fifth-sixth grade group the tape recorder produced better results only sixty percent of the time. In general, the good students maintained their high levels of achievement. The greatest improvement was found among the low achievers. It was recognized by the college researchers that the tape recorder possibly provided increased motivation since it was a new procedure for them.

4. Purpose: To discover if the use of fast and slow music affects

accuracy and speed in math computation in the third and fifth grade classrooms.

Procedure: Math tests of comparable difficulty were given to the accompaniment of both fast and slow music to a third grade class and to a fifth grade class.

Results: It was found that the third graders increased their speed with the fast music but improved their accuracy with slow music. The music had no effect on either speed or accuracy in the fifth grade classroom.

5. Purpose: To discover the effect of music in a first grade classroom and in a second grade classroom upon (a) speed and accuracy in math and spelling and (b) behavior changes of children when returning to the room.

Procedure: The children were given comparable math and spelling tests both with and without music. To assess behavior changes the student teacher recorded the amount of time required for children to enter the room, return to their seats, and become quiet.

Results: The use of music appeared to have resulted in lower scores in math but greater accuracy in spelling in both the first and second grade classrooms. In the first grade the music reduced the amount of time required for the children to become quiet while in the second grade the music had the opposite effect.

Careful evaluation of the reports submitted by the student teacher researchers indicates that the students demonstrated a wide range of ability in conducting the research and in preparing the reports. Too often the student teacher researcher did not recognize until the

experiment had been completed that there were influencing factors which they might have controlled but did not. The reports also show a lack of ability to report clearly and concisely the procedures used and the results of those procedures.

Table 1 shows the results of the attitude inventory which was administered at the beginning and at the end of the pilot study.

Table 1

Experienced Classroom Teachers Who Supervised Research Projects, Their Years of Teaching Experience, Course Work in Research, Scores on Attitude Inventory at the Beginning and at the End of Study, and Increases or Decreases in Scores

Teachers	Years of Teaching	Course in Research	First Score	Second Score	Increase or Decrease
Chesser	14	yes	18	15	-3
Joseph	22	yes	22	19	-3
Kearney	3	yes	28	17	-11
Kimbler	11	no	25	25	0
Lovelace	21	no	17	19	+2
Rhinehart	5	yes	21	27	+6
Schafstall	3	no	18	16	-2
Webb	12	yes	25	29	+4

Numerical values have been assigned to the various responses only for the purpose of attempting to observe any changes in attitude.

Since all statements were intended to reflect a favorable attitude toward research the following values were assigned: SA = 2; A= 1; U = 0; D = -1; SD = -2.

Table 1 also includes information secured on the answer sheet concerning number of years of teaching and whether or not the teacher has had a course in research.

Table 1 shows that scores of the experienced classroom teachers did not change to any great degree with the possible exception of one case. In this particular situation there is no ready explanation for the eleven point decrease since the teacher appeared to be very enthusiastic about the project, cooperated in every way, and often expressed his satisfaction with the student teacher assigned to him.

There does not appear to be any obvious relationship between the number of years of experience, whether or not the teacher has had a course in research,and the scores on the inventory.

Table 2 lists the college student teachers, their scores on the attitude inventory at the beginning and at the end of the pilot study and the increase or decrease in scores.

It may be observed that six of the ten students scored higher at the end of the pilot study and the remaining four students had lower scores of only one or two points.

A comparison of the scores of the student teachers with those of the classroom teachers shows that the number of increases and amount of increase were greater among the student teachers than among the classroom teachers. It seems logical to assume that this

might be due to (a) the fact that the student teachers had had little or no previous experience with research and were, therefore, more likely to change their attitudes as a result of the experience, and (b) the student teachers were more deeply involved and more susceptible to a change in attitude since they designed and conducted their experiments.

Table 2

Student Teacher Participants, Their Scores on the Attitude Inventory at the Beginning and at the End of the Project and Increases or Decreases in Scores

Student Participant	First Score	Second Score	Increase or Decrease
Barker	14	19	+5
Close	8	7	-1
Drewes	12	19	+7
Hiatt	15	14	-1
Hibbs	4	12	+8
Jack	23	21	-2
Keller	14	17	+3
Medellin	12	11	-1
Miller	4	19	+15
York	16	20	+4

Conclusions

The findings of this pilot study lead to the conclusion that it is possible to develop in student teachers and in experienced classroom teachers a new awareness of and appreciation for research in the classroom situation and it is possible to make the college student much more capable of carrying on functional research in classroom situations. It also seems apparent that the student teaching semester is an ideal time to help the student improve his techniques for carrying on worthwhile projects.

Since the values of implementing research in the teacher preparation program have been recognized in this pilot study, the performing of active investigation in the classroom situation will become an integral part of the student teaching block during both semesters of the approaching school year at Franklin College. The fact that elementary education majors have already had full semester experiences in two or three different classrooms and have, therefore, already made many of the adjustments required by student teachers makes it possible to offer them an enriched program of this type.

A careful evaluation of the written reports and the verbal and written comments made by both student teachers and experienced classroom teachers indicates that many of the methods used were successful, but the evaluation also gives evidence that other procedures need to be improved.

Even though the final reports were acceptable in many respects, it seems clear that the student teachers need more instruction and training in planning research designs, in carrying out the research under controlled conditions, and in writing complete and exact descriptions of the results.

A study of the techniques used in a successfully completed research project might give the college student valuable insight into the problems involved in research. It might even be advantageous to involve the college students in a group research project in the college classroom before they start designing their own projects.

Greater involvement of the experienced classroom teacher in the initial thinking stage of designing the research seems highly desirable. Also this procedure would make better use of the teacher's previous experience with research techniques. Hopefully the teacher's favorable attitude toward research in general and toward the student teacher's research in particular would tend to increase as the degree of involvement increases.

According to the student teachers, the preparation of summaries by means of slides and taped commentaries presented an interesting, challenging experience; therefore, it seems reasonable to use this procedure again.

Since this program of training student teachers to do active research in the classroom will become a part of the student teaching block during the coming year, there will be further opportunities to test these revised procedures. The new techniques tried during the first semester

will be retained, revised, or rejected during the second semester on the basis of their merit. Experimentation of this type will be continued until a worthwhile program has been formulated for our Franklin College elementary education majors.

Attachment #1

Directions: This inventory consists of twenty-one statements designed to sample opinions about classroom research. What is desired is your own individual feeling about the statements. Read each statement and indicate how you feel about it. Think in terms of the general situation rather than specific ones. Work as rapidly as you can in order to give your initial reaction to the statement. The key to the answer sheet is as follows:

SA -- strongly agree
A -- agree
U -- undecided or uncertain
D -- disagree
SD -- strongly disagree

1. Good teaching is based upon active teacher involvement in the study of classroom problems.

2. The average teacher has little opportunity to build a philosophy of educational research which is consistent with his opportunities to do research.

3. The educational practitioner in the classroom has an important research role and has a strong obligation to fulfill it.

4. The lag between research findings and educational practice will be decreased when practical research in the local schools is conducted by all school personnel.

5. Research in education has suffered considerably because it has been viewed as a formal and foreboding activity, remote from the classroom situation.

6. The most important function of educational research today is problem solving in order to improve the level of teaching and learning in our schools.

7. Educational research must be practical; results must be apparent.

8. Potential researchers should feel that it is all right to have problems.

9. The teacher must never forget that education is basically an intellectual pursuit.

10. Pure research can be referred to as basic or fundamental research.

11. Applied research has the direct purpose of improving present practice.

12. While pure research is generally the task of specialists, applied research is more often conducted by educational problem-solvers.

13. Most research in education makes use of three methods -- historical, descriptive, and experimental.

14. In historical research primary resources are original documents or remains.

15. Secondary resources in historical research would include opinions gathered from persons not living during that time but who are particularly well informed about the conditions of that particular period of time.

16. The descriptive method in educational research attempts to describe the prevailing conditions in a given situation.

17. Observational studies reveal the growth and changes that take place in a given period of time.

18. In experimental research as many components of the research situation as possible are controlled while the influence of one or several variables is measured scientifically.

19. The experimental method in the physical sciences has seemed so exacting that some educators have been reluctant to adapt this method to the study of classroom problems.

20. Teachers grow in intellect as they face problems scientifically.

21. Research activity should not interfere with the teacher's primary task of instruction.

Attachment #2

Cooperating Teacher

Student Teacher

Male _____ Female _____

Number of years of teaching experience _____

Have you completed a course in research? Yes _____ No _____

How would you describe your feelings about the values of conducting research in your elementary school classroom?

	SA	A	U	D	SD
1	::	::	::	::	::
2	::	::	::	::	::
3	::	::	::	::	::
4	::	::	::	::	::
5	::	::	::	::	::
6	::	::	::	::	::
7	::	::	::	::	::
8	::	::	::	::	::
9	::	::	::	::	::
10	::	::	::	::	::
11	::	::	::	::	::
12	::	::	::	::	::
13	::	::	::	::	::
14	::	::	::	::	::
15	::	::	::	::	::
16	::	::	::	::	::
17	::	::	::	::	::
18	::	::	::	::	::
19	::	::	::	::	::
20	::	::	::	::	::
21	::	::	::	::	::
	SA	A	U	D	SD

Score _____

Attachment #3

Budget

Audio-visual equipment	$200.00
Director of study	200.00
Travel for supervision and research	75.00
Secretarial help, supplies, processing of film, etc.	25.00
	$500.00

GRANT NUMBER IX

A PROPOSAL TO ESTABLISH A COMPUTER ORIENTED ENROLLMENT SYSTEM AT KNOX COLLEGE

January, 1969

William C. Ripperger
Director of Computer Center

672

Proposal to Create a Computer Oriented Enrollment System at Knox College

To date enrollment at Knox College has been accomplished through a distribution of unit record class cards in the Women's Gym according to individual student schedules. The enrollment is controlled by the respective departments whose representatives are present at the various tables in the Gym. It is accomplished in one Saturday morning period.

While current enrollment procedures were adequate in past times for smaller number of students they are rapidly becoming inadequate. Rationing of spaces in classes is made only on the basis of class rank, and by the time freshmen are allowed to enroll many courses are closed. This indicates we are not adequately planning the distribution of courses offered because we do not have data on the course demand facing the college.

This proposal for computer oriented enrollment requires that we (1) establish identification numbers for all courses, (2) create a unit record enrollment card which can be mark-sensed by the academic adviser, (3) make a trial run comparing course demand with course capacity, (4) allow departments to change course and section offerings as well as capacity figures in light of the demand, (5) automatically resection students closed out of a particular section in a course, and (6) identify for subsequent enrollment those students closed out of specific courses. It is also proposed that the rationing of spaces be made on the basis of (1) reservation cards, (2) class standing, (3) order of preference stated and (4) random selection, the order of priority being as stated.

To accomplish this some fourteen individual but related computer programs must be created. I am therefore requesting a USOE seed grant of $500 to support student assistance in this programming.

GRANT NUMBER IX

SEED GRANT REPORT

COMPUTER ORIENTED ENROLLMENT AT KNOX COLLEGE

Report by George L. Melville

Programming:

William C. Ripperger
Terry Keeling

674

KNOX COLLEGE

GALESBURG, ILLINOIS 61401

Office of the Registrar

In response to numerous requests for the description of Computer Oriented Enrollment at Knox College, the letter below was prepared to be sent with the accompanying material:

Our enrollment for each term occurs early in the last month of the preceding term. The faculty advisers to students are given two copies of their Academic Development Record, one for himself and one for the student. This record presents the student's entering credentials and academic record on one sheet and an analysis of these facts in relation to satisfaction of the college's graduation requirements on another sheet. The adviser is also given an enrollment schedule form and a mark sense enrollment card for each of his advisees.

Each class to be offered the next term is listed on a one-sheet (printing on both sides) Class Schedule and is assigned an identification number. The identification numbers are relevant only to the enrollment in the given term. All such numbers are from 500 to 999 to avoid confusion with actual course numbers.

The adviser and the student decide the student's program, printing the course schedule and identification numbers on schedule form and mark sensing the identification numbers on the enrollment card with a special IBM pencil. The schedules and enrollment cards are returned to my office by a certain date by the faculty adviser.

The enrollment cards are run through a preliminary program which produces a listing of enrollments as marked on the enrollment cards. This list is checked against the student's enrollment schedules. This entire procedure is done to check the accuracy of the mark sensing, it being much easier to check the print-out from these cards than to check the cards themselves. We find a fair number of errors each term, and by correcting them after this check we keep the errors from distorting the enrollments.

After the enrollment cards have been corrected we make a computer run which lists the total demand for each class, checks this against preassigned closing sizes of classes, and states the numbers closed out in various classes. A supplementary program analyzes the close-outs from the standpoint of class standing and stated preference of classes.

Each department is given this potential enrollment for its classes and the analysis of potential close-outs. The departments have twenty-four hours to cancel courses, to change the stated class sizes and to add sections of courses for which there is great demand. They do this by appropriately marking the print-out which we send them.

After programming these changes by departments a second run of the enrollment cards is made which assigns students to specific classes and closes students out of other courses. Spaces in each class are rationed on the following bases: (1) reservation in the course (given to students in courses involving a continuing sequence), (2) class standing (sr., jr., etc.), (3) order of preference listed (courses are listed on the enrollment cards as first choice, second choice, etc.), and (4) random selection.

If a section of a course fills up the computer will check the schedule of the students closed out and will attempt to assign them to another section of the course, if one exists.

A supplementary program supplies enrollment schedules for all students and indicates section transfers and the courses in which the student was closed out. These print-outs are sent to the individual students for their information. Where a student is closed out of a course the print-out indicates that the student should return to his adviser for the selection of another course.

When a student is closed out of a course the computer will produce a new enrollment card for him which is returned to the adviser with a copy of the print-out indicating the student was closed out of a course.

After this run we produce on the computer a multilith master of enrollment demand, class sizes, and number of spaces remaining in each class. We multilith this information for distribution to faculty advisers and for posting in various places on campus for the students.

A secondary enrollment is run to handle students closed out of courses who must change to other courses. A date is established for this enrollment and all materials must be returned to our office by that time. The few students who cannot fit a program together in these two enrollments are handled by hand with change of enrollment slips.

Notice that we make no attempt to assign class times by computer. Our students and faculty would be very much opposed to that.

The above procedures do not apply in the case of freshman enrollment. There simply is not time to do this kind of thing when students enter in the fall. All returning upperclassmen (most of them) will have enrolled in May. The new students and upperclassmen not already enrolled go through a setup in the gym where they pick up class cards from tables at which the various departments are represented. A two-hour period is sufficient to handle this enrollment (500-575 students).

Our extensive computer programming is laid out for the IBM 1130 (16K). Should you be interested in developing procedures similar to ours, you're welcome to visit us and to steal anything you can.

Sincerely yours,

George L. Melville
Registrar and Director of
Institutional Research

GLM:eo
Enclosures

February 7, 1969

ENROLLMENT PROCEDURES. INSTRUCTIONS TO ACADEMIC ADVISERS

Note: In the left most column of the class schedule is designated a three digit Identification Number for each class which has been scheduled. These numbers will be used in the enrollment process to identify on a salmon colored enrollment card those scheduled classes which the student proposes to take. (See the procedure for "mark sensing" of enrollment cards on the accompanying page)

Directions:

ON THE STUDENT'S ENROLLMENT SCHEDULE FORM

1. List the several scheduled classes the student proposes to take in order of the student's preference. Be sure to include Physical Education classes where required.

2. State the period each class meets at the appropriate days of the week and the amount of credit associated with the course.

3. Pencil the class Identification Number in the "remarks" column after each scheduled class.

4. Courses the student proposes to take at Monmouth College have not been given Identification Numbers but should be listed and the appropriate credit stated. These classes should be noted with a large M.C. in the "remarks" column.

5. Courses in Advanced Studies, Independent Studies and Applied Music have not been given Identification Numbers but should be listed and the appropriate credit stated. The name of the faculty director should be stated in the "remarks" column.

6. Total the credit to be attempted.

ON THE STUDENT'S ENROLLMENT CARD

1. Appropriately mark sense on this card the Identification Number of each scheduled class the student intends to take in the columns corresponding to the student's stated preference.

2. Courses to be taken at Monmouth, Advanced Studies, Independent Studies and Applied Music cannot be listed on this card.

GIVE THE STUDENT A COPY OF HIS PROPOSED SCHEDULE AND RETAIN ONE COPY FOR YOUR RECORDS. RETURN THE REGISTRAR'S COPIES OF THE STUDENTS' ENROLLMENT SCHEDULES TOGETHER WITH THE COMPLETED ENROLLMENT CARDS BY FEBRUARY 21ST.

Procedures. The Office of Data Processing and the Computer Center will control enrollment through the enrollment cards. In cases where classes are filled a rationing of spaces will occur on the following bases:

(1) instructor's reservations
(2) class standing
(3) order of preference stated
(4) random selection

When a student is closed out of a particular section (or lab) of a course, he will be placed in another section (or lab) consistent with his remaining schedule. Students closed out of courses where other sections are not available will be notified and asked to return to their adviser for enrollment in other courses. A supplementary enrollment to handle alternative enrollments to closed courses and late enrollments will occur shortly after the original run. Students merely wanting to change their enrollments may not do so until the first day of the following term.

SAMPLE ENROLLMENT SCHEDULE

STUDENT NAME: Jones, John H.

DATE: 3rd Term 1968-69

MAJOR:

ADVISOR: Smith

COURSE		M	T	W	T	F	OR	REMARKS
Geol 101		1	1	1	1	1	1	384
Hist 106	2	2		2		2	1	439
Physics 223	1	5		5-6			½	702
Econ 351							½	White
P.E.	D		4		4			586
							3	

M	F	TO REGISTRAR	SPEC	SR	JR	SOPH	FR
X						X	

Jones, John H.

RESERVE FOR DATA PROCESSING

COURSE CODE 1ST CHOICE | COURSE CODE 2ND CHOICE | COURSE CODE 3RD CHOICE | COURSE CODE 4TH CHOICE | COURSE CODE 5TH CHOICE | COURSE CODE 6TH CHOICE

ENROLLMENT CARD

MARK SENSING OF ENROLLMENT CARDS

The Identification Numbers written in the "remarks" column of the student's enrollment schedule are entered on the enrollment card with the special pencil sent to you with your enrollment materials.

In the given example the student's first preference of classes is identified as 384. This number is entered on the enrollment card by blacking out the 3 oval in the left most column of the 1st choice field, by blacking out the 8 oval in the center column of this field, and by blacking out the 4 oval in the right most column of this field. The Identification Numbers of the remaining scheduled classes are entered in similar fashion in the order of stated preference.

Be sure to completely blacken the appropriate ovals. Do not blacken two or more ovals in any one column.

MAR 1968

3-7-68

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
101	AS	202			CHG ENV AM CULT	1.	MTWTF2			38	
112	ART	103			FORM AND EXP	1.	TT 1&2		52	52	CLOSED
114	ART	202			DRAWING	1.	MTWTF5		30	32	CLOSED
116	ART	301			ADV DRAWING	1.	MTWTF5		3	3	CLOSED
118	ART	305			PAINTING I	1.	MWF2&3		25	25	CLOSED
120	ART	305A			PAINTING I	0.5	MW 2&3		5	5	CLOSED
122	ART	311			PRINTS I	1.	MWF4&5		25	12	
124	ART	311A			PRINTS I	0.5	MW 4&5		25	1	
126	ART	315			SCULPTURE I	1.	MWF4&5		11	11	CLOSED
128	ART	315A			SCULPTURE I	0.5	MW 4&5				CANCELLED
130	ART	319	1		CERAMICS I	1.	MWF2&3		20	15	closed
134	ART	319	2		CERAMICS I	1.	MWF5&6		20	19	
132	ART	319A			CERAMICS I	0.5	MW 2&3		20	6	closed
136	ART	340			PREHIS & N EAS	1.	MWT 4			34	
138	ART	450			COMP EXAM	1.	TBA			16	
149	BICL	212		1	MICROBIOLOGY	1.	MWF 2	TU 2&3	15	12	
151	BICL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15	CLOSED
153	BICL	222			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
155	BICL	241			NAT HIST VERTE	1.	TW 4		24	23	
157	BICL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
159	BICL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3	
161	BICL	341			GEN EMBRYOL	1.	MTWTF3			13	
163	BICL	361			BIOL SEMINAR	0.5	MW 6			11	
165	BICL	450			COMP EXAM	1.	TBA			23	
176	CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
178	CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17	
180	CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
182	CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7	
184	CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
186	CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4	
188	CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
190	CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0	
192	CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16	
194	CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5	
196	CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3	
198	CHEM	301			INORGAN CHEM	1.	MWTF 3			14	
200	CHEM	303			SEMINAR IN CHEM	0.5	TU 6			4	
202	CHEM	334			ADV PHYS CHEM	1.	MWTF 5			8	
204	CHEM	450			COMP EXAM	1.	TU 2			9	
215	CS	101			INT TO COMP SCI	1.	MTWTF1			38	
217	CS	201			COMP & PROGAM	1.	MTWTF3		25	25	CLOSED

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ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
228	ECON	103			AMER ECON HIST	1.	MTWTF2		45	47	CLOSED
229	ECON	202			PRINCIPLES II	1.	MWTF 4			22	
230	ECON	303			STATISTICS	1.	MTWTF3			28	
232	ECON	312			COMPUTER APPL	1.	TBA		10	8	
234	ECON	323	1		MANAGEMENT ACCT	1.	MF 2	TU 2		3	
236	ECON	323	2		MANAGEMENT ACCT	1.	MF 2	W 2		16	
238	ECON	323	3		MANAGEMENT ACCT	1.	MF 2	TH 2		5	
240	ECON	324			MONEY BANKING	1.	MWTF 4			24	
242	ECON	325			PUB FINANCE	1.	MWF 5			23	
244	ECON	326			INTER TRADE	1.	MWF 2			25	
246	ECON	328			ECON GROWTH	1.	MWTF 1			16	
248	ECON	450			COMP EXAM	1.	TT 5			24	
259	EDLC	309			LG ART EL SCH	1.	MTWTF4			16	
261	EDLC	317			PE IN ELE SCH	0.5	W 7			18	
263	EDLC	322			ENG IN SEC SCH	0.5	TU 7			8	
265	EDLC	324			MATH IN SEC SCH	0.5	TBA			7	
267	EDLC	325			ART IN SEC SCH	0.5	TBA			1	
269	EDLC	327			SOC ST SEC SCH	0.5	TT 6			12	
271	EDLC	328			SCI IN SEC SCH	0.5	TBA			3	
273	EDLC	345			STUD TCH ELEM	1.	TBA			4	
275	EDLC	346			STUD TCH ELEM	1.	TBA			4	
277	EDLC	347			STUD TCH ELEM	0.5	TBA			4	
279	EDLC	365			STUD TCH SEC	1.	TBA			2	
281	EDLC	366			STUD TCH SEC	1.	TBA			2	
283	EDLC	369	1		HIST & PHIL	0.5	MWF 1		26	26	CLOSED
285	EDLC	369	2		HIST & PHIL	0.5	MWF 6		25	20	
287	EDLC	390			LNG THEC ADCL P	1.0	MWF4W5			36	
289	EDLC	391			METH EVAL SEC E	1.0	MWF4W5			35	
291	EDLC	450			COMP EXAM	1.	TBA			12	
302	ENG	101	1		FRESHMAN ENG	1.	MWF 1		22	22	CLOSED
304	ENG	101	2		FRESHMAN ENG	1.	MWF 2		22	21	
306	ENG	101	3		FRESHMAN ENG	1.	MTT 3		22	22	CLOSED
308	ENG	101	4		FRESHMAN ENG	1.	MWF 4				CANCELLED
310	ENG	101	5		FRESHMAN ENG	1.	MTT 5		22	17	
312	ENG	201			EXPOS WRIT	1.	MWF 5		22	22	CLOSED
314	ENG	207			BEGIN WRIT-FICT	1.	MW 5		21	23	CLOSED
316	ENG	208			BEGIN WRIT-POET	1.	MWF 5		20	22	CLOSED
318	ENG	209			BEG PLAYWRITING	1.	MWF 5		20	7	
320	ENG	221	1		INTRO TO POETRY	1.	MWF 4		25	25	CLOSED
321	ENG	221	2		INTRO TO POETRY	1.	MWF 4		20	24	CLOSED
322	ENG	222	1		INTRO TO FICT	1.	MWF 4		25	25	CLOSED

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
324	ENG	222	2		INTRO TO FICT	1.	MWF 5		25	24	
325	ENG	222	3		INTRO TO FICT	1.	MWF 4		25	25	CLOSED
326	ENG	223	1		INTRO TO DRAMA	1.	MWF 3		25	25	CLOSED
327	ENG	223	2		INTRO TO DRAMA	1.	MWF 3		20	27	CLOSED
328	ENG	241			MAST LIT I	1.	MWF 2		25	27	CLOSED
330	ENG	242			MAST LIT II	1.	MWF 2		28	27	
331	ENG	311			ADV WRITING	1.	TBA			2	
332	ENG	318			AMER LIT II	1.	MTT 4		25	20	
334	ENG	323			STUD IN AM LIT	1.	TU 4&5		16	18	CLOSED
336	ENG	324			STUD IN AM LIT	1.	MWF 3		25	22	
338	ENG	327			STUD IN EN LIT	1.	TT 2&3		15	8	
340	ENG	330			CHAUCER	1.	MWF 2		25	19	
342	ENG	334			LIT CRIT	1.	MWF 4				CANCELLED
344	ENG	340			16TH CENT LIT	1.	MWF 3		30	22	
346	ENG	348			MOD DRAMA	1.	MTWF 5				CANCELLED
348	ENG	450			COMP EXAM	1.	TBA			28	
359	FR	103	1		ELEM FRENCH	1.	MTWTF6			25	
361	FR	103	2		ELEM FRENCH	1.	MTWTF2			17	
363	FR	103	3		ELEM FRENCH	1.	MTWTF4		26	27	CLOSED
365	FR	201			INTER FRENCH	1.	MTWTF3			27	
367	FR	202			READ FR LIT	1.	MTWTF5			19	
369	FR	319			MEDIEVAL LIT	1.	MWF 4			13	
371	FR	320			WRITTEN & ORAL	1.	MTWTF3			37	
373	FR	450			COMP EXAM	1.	TBA			14	
384	GEOL	101			GEN GEOL I	1.	MTWTF1		57	57	CLOSED
386	GEOL	103			GEN GEOL III	1.	MTWTF4			17	
388	GEOL	305			IG METAMOR CRE	1.	MTWF 5			5	
390	GEOL	311			STRUCTUR GEOL	1.	MTWF 6			8	
392	GEOL	450			COMP EXAM	1.	TBA			3	
403	GERM	103	1		ELEM GERMAN	1.	MTWTF1		18	18	CLOSED
405	GERM	103	2		ELEM GERMAN	1.	MTWTF2			15	
406	GERM	103	3		ELEM GERMAN	1.	MTWTF1			17	
407	GERM	201			INTER GERMAN	1.	MTWTF2			10	
409	GERM	311			BARCQUE ENLIG	1.	MWTF 4				CANCELLED
411	GERM	317			CLASS PERIOD	1.	MWTF 2			4	
413	GERM	326			GERMANY E & W	1.	MTWF 4			6	
415	GERM	450			COMP EXAM	1.	TBA			2	
426	GRP	122			NON-VIOL DIR	0.5	W 7			51	
428	GRP	123			TOPICS-MIL HIST	0.5	SAT			5	
437	HIST	106	1		WEST CIV	1.	MWT 1		32	32	CLOSED
439	HIST	106	2		WEST CIV	1.	MWF 2		32	31	

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
441	HIST	106	3		WEST CIV	1.	MWT 3		32	32	CLOSED
442	HIST	106	4		WEST CIV	1.	MWTF 4		32	37	CLOSED
445	HIST	106	5		WEST CIV	1.	MTWT 5		32	33	CLOSED
447	HIST	106	6		WEST CIV	1.	MTWT 6		32	33	CLOSED
449	HIST	202	1		AMER HIST	1.	MWT 3		51	54	CLOSED
451	HIST	202	2		AMER HIST	1.	MTT 2		45	36	
453	HIST	303			TUDOR STUART	1.	MTWT 4			4	
455	HIST	312			REFORMATION	1.	MTWT 2			7	
457	HIST	324			GERM 1914 45	1.	MWF 3			21	
459	HIST	333			20TH CENT NEGRO	1.	TT 5		22	22	CLOSED
461	HIST	342			AMER FOR REL	1.	MWF 5		20	22	CLOSED
463	HIST	387			INDIA & S E AS	1.	TT 4			19	
465	HIST	450			COMP EXAM	1.	TBA			24	
476	MATH	102			BASIC MATH II	1.	MTWTF4			22	
478	MATH	123			FINITE MATH	1.	MTWTF5			8	
480	MATH	152			CALCULUS II	1.	MTWTF2			21	
482	MATH	301	1		LINEAR ALG	1.	MTWTF2		20	12	
484	MATH	301	2		LINEAR ALG	1.	MTWTF3		27	27	CLOSED
486	MATH	301	3		LINEAR ALG	1.	MTWTF5		25	24	
488	MATH	312			CALCULUS IV	1.	MTWTF1			13	
490	MATH	313			INTRO TOPOLOGY	1.	MTWTF3			13	
492	MATH	316			FOUND OF GEOM	1.	MTWTF5			13	
494	MATH	322			MATH STAT II	1.	MTWTF4			10	
496	MATH	327			FOUND OF MATH	1.	MTWTF2			6	
498	MATH	333			COMPLEX ANAL	1.	MTWTF1			10	
500	MATH	334			REAL VARIABLE	1.	MTWTF3			4	
502	MATH	349			SEM IN ALGEBRA	1.	MTWTF4			3	
504	MATH	450			COMP EXAM	1.	TBA			13	
515	MS	303	1		JR MIL SCI	0.5	TT 1			10	
517	MS	303	2		JR MIL SCI	0.5	TT 4			6	
519	MS	303	3		JR MIL SCI	0.5	TT 6			6	
521	MS	313	1		SR MIL SCI	0.5	TT 1			5	
523	MS	313	2		SR MIL SCI	0.5	TT 4			9	
525	MS	313	3		SR MIL SCI	0.5	TT 6			0	
536	MUS	103			THEORY HIS III	1.	MTWTF2			12	
538	MUS	106			INT TO MUS	1.	MTTF 2		35	37	CLOSED
540	MUS	207			THEORY HIST VI	1.	MTWT 3			4	
542	MUS	303			COMPOSITION	1.	TBA			1	
544	MUS	312			INST CONDUCT	0.5	MTT 5			2	
546	MUS	322			FUND OF MUS	0.5	MWF 4		8	3	
548	MUS	450			COMP EXAM	1.	MWF 4			2	

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ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
559	PHIL	115	1		INT TO PHIL	1.	MWF 3		61	61	CLOSED
561	PHIL	115	2		INT TO PHIL	1.	MWF 5		25	25	CLOSED
563	PHIL	212	1		PHIL PERS VALU	1.	TH 7		22	23	CLOSED
564	PHIL	212	2		PHIL PERS VALU	1.	TU 4&5		18	18	CLOSED
566	PHIL	212	3		PHIL PERS VALU	1.	TH 4&5		4	4	CLOSED
565	PHIL	303			CONTEMP ANAL	1.	TBA				CANCELLED
567	PHIL	330			PROB IN ETHICS	1.	TBA			10	
569	PHIL	450			COMP EXAM	1.	TBA			1	
580	PEW		A		SWIMMING	.	MW 4				CANCELLED
582	PEW		B		SWIM-DIVING	.	TT 2		12	3	
584	PEW		C		LIFE SAVING	.	MW 3		12	3	
586	PEW		D		ADV SWIMMING	.	TT 4		18	5	
588	PEW		E		WSI MIXED	.	TBA		12	8	
590	PEW	001	F		GOLF MIXED	.	MW 3		12	1	
592	PEW	001	G		GOLF MIXED	.	TT 3		12	10	
594	PEW	002	H		TENNIS	.	MW 4		12	6	
596	PEW	002	J		TENNIS	.	TT 4		12	9	
598	PEW	002	K		TENNIS	.	MW 5		12	8	
600	PEW	002	L		TENNIS	.	TT 5		12	6	
602	PEW	003	M		ARCHERY MIXED	.	MW 3		12	3	
604	PEW	003	N		ARCHERY MIXED	.	TT 3		12	6	
606	PEW		P		RIFLE MARKS	.	TBA		18	19	CLOSED
608	PEW	004	Q		WEIGHT TRAIN	.	MW 4		15	12	
610	PEW	004	R		WEIGHT TRAIN	.	TT 4				CANCELLED
612	PEW	004	S		WEIGHT TRAIN	.	MW 5				CANCELLED
614	PEW	004	T		WEIGHT TRAIN	.	TT 5				CANCELLED
616	PEW	005	V		CHOICE ACTIVITY	.	MW 4		40	25	
618	PEW	005	W		CHOICE ACTIVITY	.	TT 4		40	24	
620	PEW	005	X		CHOICE ACTIVITY	.	MW 5		40	17	
622	PEW	005	Y		CHOICE ACTIVITY	.	TT 5		40	16	
624	PEW		Z		INTERCOLL ATHLE	.	TBA			50	
626	PEW	321			COACH OF FTBL	0.5	TBA			1	
628	PEW	322			COACH SW&BSBALL	1.	TBA			1	
630	PEW	324			COACH BBALL	0.5	TBA			2	
632	PEW	326			ORG&ADM PE&ATH	1.	TBA			2	
634	PEW	327			CARE & PREVENT	1.0	TBA			7	
647	PEW	007	B		ARCHERY MIXED	.	MW 3		12	5	
649	PEW	007	C		ARCHERY MIXED	.	TT 3		12	6	
645	PEW	006	A		ARCHERY	.	TT 2		12	10	
651	PEW	006	D		ARCHERY	.	MW 4		12	11	
653	PEW	006	E		ARCHERY	.	TT 4		12	12	CLOSED

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME		LAB TIME	MAX SIZE	DEMAND	
655		006	F		ARCHERY	.	MW	5				CANCELLED
657		008	G		BOWLING	.	MW	4		12	12	CLOSED
659		008	H		BOWLING	.	MW	6		12	12	CLOSED
661	PEW		J		DANCE	.	TT	2				CANCELLED
663	PEW	009	K		GOLF MIXED	.	MW	3		12	9	
665	PEW	009	L		GOLF MIXED	.	TT	3		12	10	
667	PEW		M		SWIM-INTERMED	.	MW	5				CANCELLED
669	PEW		N		SWIM BEG-INTER	.	MW	6		15	12	
671	PEW		P		SWIMMING WSI	.	TBA			15	15	CLOSED
662	PEW	010	J		TENNIS	.	TT	2		12	9	
668	PEW	010	M		TENNIS	.	MW	5		12	13	CLOSED
673	PEW	010	O		TENNIS	.	MW	2		12	10	
675	PEW	010	R		TENNIS	.	MW	3		12	12	CLOSED
677	PEW	010	S		TENNIS	.	TT	3		12	12	CLOSED
679	PEW	010	T		TENNIS	.	TT	4		12	12	CLOSED
681	PEW	010	U		TENNIS	.	TT	5		12	12	CLOSED
683	PEW		V		PUDDLES	.	TBA				5	
685	PEW		W		DANCE CLUB	.	TBA				6	
692	PHYS	123		1	COLL PHYS III	1.	MWF	2	TH 1&2		5	
694	PHYS	123		2	COLL PHYS III	1.	MWF	2	TH 4&5		7	
696	PHYS	133		1	GEN PHYS II	1.	MWF	2	TU 1&2		17	
698	PHYS	133		2	GEN PHYS II	1.	MWF	2	TU 4&5		27	
700	PHYS	133		3	GEN PHYS II	1.	MWF	2	W. 5&6		6	
702	PHYS	223		1	ELEC INSTRUMENT	0.5	M	5	W 5&6		13	
704	PHYS	223		2	ELEC INSTRUMENT	0.5	M	5	F 5&6		1	
706	PHYS	233		1	WAVES	1.	MWF	4	TU 5&6		6	
708	PHYS	233		2	WAVES	1.	MWF	4	TH 5&6		6	
710	PHYS	253			SCI AND SOC	1.	MWF	3		51	53	CLOSED
712	PHYS	303			NUCLEAR PHYS	1.	TBA					CANCELLED
714	PHYS	312			ADV LAB II	0.5	TBA				1	
716	PHYS	343			QUANTUM MECH	1.	MWTF	1			5	
718	PHYS	450			COMP EXAM	1.	TBA				4	
729	PS	201			AM NATL GOVN	1.	MTWTF	2			71	
731	PS	202			ST REG LOCAL	1.	MWF	4		32	36	CLOSED
733	PS	203			EUR GOVN	1.	MWF	3		65	69	CLOSED
735	PS	302			JURISPRUDENCE	1.	TT	3		30	28	
737	PS	312			INT LAW & ORG	1.	MWF	5		15	7	
739	PS	319			ASIAN AFR GOV	1.	TBA			10	8	
741	PS	336			CONT POL PROC	1.	MWF	3		15	7	
743	PS	354			SEM LEGIS BEHAV	1.	TBA			10	6	
745	PS	450			COMP EXAM	1.	TBA				27	

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	
756	PSY	111			INTRC PSYCH	1.	MTWT 1		45	45	CLOSED
758	PSY	203			STAT EXP PROC	1.	MWF 3		45	46	CLOSED
760	PSY	303			MCTIVATION	1.	MWF 4			22	
762	PSY	303A			LAB IN MCTIV	0.5	TBA			11	
764	PSY	315			CLIN PRACTICUM	1.0	TBA			5	
766	PSY	450			CCMP EXAM	1.	TBA			7	
777	REL	301			JUD CATH PRCT	1.	MWF 5			22	
779	REL	310			BUDDHISM	1.	MWF 4			41	
790	RUSS	103	1		ELEM RUSS	1.	MTWTF3			22	
792	RUSS	103	2		ELEM RUSS	1.	MTWTF5			16	
794	RUSS	210			CCNV COMP	1.	MTWF 1			8	
796	RUSS	302			19TH CENT LIT	1.	MWF 3			3	
798	RUSS	450			CCMP EXAM	1.	TBA			0	
809	ANTH	201			INTRO ANTH	1.	MWF 1		65	65	CLOSED
811	SCC	201			INTRO TO SOC	1.	MTWTF2		99	64	
813	SCC	303			URBAN PROB	1.	MWS W7		40	40	CLOSED
815	SCC	307	1		DEV BEHAV	1.	TT 3		20	24	CLOSED
817	SCC	307	2		DEV BEHAV	1.	TT 4		21	21	CLOSED
819	SCC	310			SMALL GROUPS	1.	MWF 4		30	37	CLOSED
821	SCC	450			CCMP EXAM	1.	TBA			20	
832	SPAN	103	1		ELEM SPAN	1.	MTWTF1			19	
834	SPAN	103	2		ELEM SPAN	1.	MTWTF2		26	25	
836	SPAN	103	3		ELEM SPAN	1.	MTWTF4			26	
837	SPAN	201			INTER SPAN	1.	TBA			1	
838	SPAN	302			MOD FICT POET	1.	MTTF 3			10	
840	SPAN	320			WRITT AND ORAL	1.	MTWTF2			15	
842	SPAN	325			SPANISH CULTURE	0.5	MWF 1			10	
844	SPAN	450			CCMP EXAM	1.	TBA			6	
855	SPCH	101			PUB SPEAKING	0.5	MTT 5		20	22	CLOSED
856	SPCH	291			THEATRE PART	1.	TBA			11	
857	SPCH	332			ADV ACTING	1.	MTWTF4		20	13	
859	SPCH	334			DIRECTING	1.	MTWTF3		20	17	
861	SPCH	341			TH RENAIS-18TH	1.	MWF 5			11	
862	SPCH	392			THEATRE PART	1.	TBA			2	
863	SPCH	450			CCMP EXAM	1.	TBA			8	
888					ACM-ARGONNE	.				1	
898					ACM-NEWBERRY	.				1	
999					FRENCH PROGRAM	.				18	

After Supplementary Enrollment 2/7/67

RSES MEETING DURING PERIOD 1

DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	NO. CLOSE
ART	103			FORM AND EXP	1.	TT 1&2		52	52	
BIOL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
BIOL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
BIOL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3	
CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17	
CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7	
CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4	
CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0	
CS	101			INT TO COMP SCI	1.	MTWTF1			38	
ECON	328			ECON GROWTH	1.	MWTF 1			16	
EDUC	369	1		HIST & PHIL	0.5	MWF 1		26	26	
ENG	101	1		FRESHMAN ENG	1.	MWF 1		22	22	
GEOL	101			GEN GEOL I	1.	MTWTF1			57	
GERM	103	1		ELEM GERMAN	1.	MTWTF1		18	18	
GERM	103	3		ELEM GERMAN	1.	MTWTF1			17	
HIST	106	1		WEST CIV	1.	MWT 1		32	32	
MATH	312			CALCULUS IV	1.	MTWTF1			13	
MATH	333			COMPLEX ANAL	1.	MTWTF1			10	
MS	303	1		JR MIL SCI	0.5	TT 1			10	
MS	313	1		SR MIL SCI	0.5	TT 1			5	
PHYS	123		1	COLL PHYS III	1.	MWF 2	TH 1&2		5	
PHYS	133		1	GEN PHYS II	1.	MWF 2	TU 1&2		17	
PHYS	343			QUANTUM MECH	1.	MWTF 1			5	
PSY	111			INTRO PSYCH	1.	MTWT 1		45	45	
RUSS	210			CONV COMP	1.	MTWF 1			8	
ANTH	201			INTRO ANTH	1.	MWF 1		65	65	
SPAN	103	1		ELEM SPAN	1.	MTWTF1			19	
SPAN	325			SPANISH CULTURE	0.5	MWF 1			10	

22 COURSES 551 DEMAND 0 CLOSED

COURSES MEETING DURING PERIOD 2

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND
101	AS	202			CHG ENV AN CULT	1.	MTWTF2			38
112	ART	103			FORM AND EXP	1.	TT 1&2		52	52
118	ART	305			PAINTING I	1.	MWF2&3		25	25
120	ART	305A			PAINTING I	0.5	MW 2&3		5	5
130	ART	319	1		CERAMICS I	1.	MWF2&3		20	15
132	ART	319A			CERAMICS I	0.5	MW 2&3		20	6
149	BIOL	212		1	MICROBIOLOGY	1.	MWF 2	TU 2&3	15	12
151	BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15
153	BIOL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18
157	BIOL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3
176	CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4
180	CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3
184	CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2
188	CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0
192	CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16
194	CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5
196	CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3
204	CHEM	450			COMP EXAM	1.	TU 2			9
226	ECON	103			AMER ECON HIST	1.	MTWTF2		45	47
234	ECON	323		1	MANAGEMENT ACCT	1.	MF 2	TU 2		3
236	ECON	323		2	MANAGEMENT ACCT	1.	MF 2	W 2		16
238	ECON	323		3	MANAGEMENT ACCT	1.	MF 2	TH 2		5
244	ECON	326			INTER TRADE	1.	MWF 2			25
304	ENG	101	2		FRESHMAN ENG	1.	MWF 2		22	21
328	ENG	241			MAST LIT I	1.	MWF 2		25	27
330	ENG	242			MAST LIT II	1.	MWF 2		22	27
338	ENG	327			STUD IN EN LIT	1.	TT 2&3		15	8
340	ENG	330			CHAUCER	1.	MWF 2		25	19
361	FR	103	2		ELEM FRENCH	1.	MTWTF2			17
405	GERM	103	2		ELEM GERMAN	1.	MTWTF2			15
407	GERM	201			INTER GERMAN	1.	MTWTF2			10
411	GERM	317			CLASS PERIOD	1.	MWTF 2			4
439	HIST	106	2		WEST CIV	1.	MWF 2		32	31
451	HIST	202	2		AMER HIST	1.	MTT 2		45	36
455	HIST	312			REFORMATION	1.	MTWT 2			7
80	MATH	152			CALCULUS II	1.	MTWTF2			21
82	MATH	301	1		LINEAR ALG	1.	MTWTF2		20	12
96	MATH	327			FOUND OF MATH	1.	MTWTF2			6
36	MUS	103			THEORY HIS III	1.	MTWTF2			12
38	MUS	106			INT TO MUS	1.	MTTF 2		35	37
82	PEW		E		SWIM-DIVING	.	TT 2		12	3
45	PEW	006	A		ARCHERY	.	TT 2		12	10
62	PEW	010	J		TENNIS	.	TT 2		12	9
73	PEW	010	C		TENNIS	.	MW 2		12	10
92	PHYS	123		1	COLL PHYS III	1.	MWF 2	TH 1&2		5
94	PHYS	123		2	COLL PHYS III	1.	MWF 2	TH 4&5		7
96	PHYS	133		1	GEN PHYS II	1.	MWF 2	TU 1&2		17
98	PHYS	133		2	GEN PHYS II	1.	MWF 2	TU 4&5		27
00	PHYS	133		3	GEN PHYS II	1.	MWF 2	W 5&6		6
29	PS	201			AP NATL GOVN	1.	MTWTF2			71
11	SOC	201			INTRO TO SOC	1.	MTWTF2		99	64
34	SPAN	103	2		ELEM SPAN	1.	MTWTF2		26	25
40	SPAN	320			WRITT AND ORAL	1.	MTWTF2			15

93 COURSES 506 DEMAND 6 CLOSED

URSES MEETING DURING PERIOD 3

	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND	N CLO
8	ART	305			PAINTING I	1.	MWF2&3		25	25	
0	ART	305A			PAINTING I	0.5	MW 2&3		5	5	
0	ART	315	1		CERAMICS I	1.	MWF2&3		20	15	
2	ART	315A			CERAMICS I	0.5	MW 2&3		20	6	
9	BIOL	212		1	MICROBIOLOGY	1.	MWF 2	TU 2&3	15	12	
3	BIOL	232			EMBRYOPHYTES	1.	TT 3	TT 1&2		18	
7	BIOL	318		1	CELL PHYSIOL	1.	MWF 1	TH 2&3	15	3	
1	BIOL	341			GEN EMBRYOL	1.	MTWTF3			13	
6	CHEM	103		1	GEN CHEM	1.	MWTF 1	TU 2&3		4	
0	CHEM	103		3	GEN CHEM	1.	MWTF 1	TH 2&3		3	
4	CHEM	113		1	ADV GEN CHEM	1.	MWTF 1	TU 2&3		2	
8	CHEM	113		3	ADV GEN CHEM	1.	MWTF 1	TH 2&3		0	
8	CHEM	301			INORGAN CHEM	1.	MWTF 3			14	
7	CS	201			COMP & PROGAM	1.	MTWTF3		25	25	
0	ECON	303			STATISTICS	1.	MTWTF3			28	
6	ENG	101	3		FRESHMAN ENG	1.	MTT 3		22	22	
6	ENG	223	1		INTRO TO DRAMA	1.	MWF 3		25	25	
7	ENG	223	2		INTRO TO DRAMA	1.	MWF 3		20	27	
6	ENG	324			STUD IN AM LIT	1.	MWF 3		25	22	
8	ENG	327			STUD IN EN LIT	1.	TT 2&3		15	8	
4	ENG	340			16TH CENT LIT	1.	MWF 3		30	22	
5	FR	201			INTER FRENCH	1.	MTWTF3			27	
1	FR	320			WRITTEN & ORAL	1.	MTWTF3			37	
1	HIST	106	3		WEST CIV	1.	MWT 3		32	32	
9	HIST	202	1		AMER HIST	1.	MWT 3		51	54	
7	HIST	324			GERM 1914 45	1.	MWF 3			21	
4	MATH	301	2		LINEAR ALG	1.	MTWTF3		27	27	
0	MATH	313			INTRO TOPOLOGY	1.	MTWTF3			13	
0	MATH	334			REAL VARIABLE	1.	MTWTF3			4	
0	MUS	207			THEORY HIST VI	1.	MTWT 3			4	
5	PHIL	115	1		INT TO PHIL	1.	MWF 3		61	61	
4	PEM		C		LIFE SAVING	.	MW 3		12	3	
0	PEM	001	F		GOLF MIXED	.	MW 3		12	1	
2	PEM	001	G		GOLF MIXED	.	TT 3		12	10	
2	PEM	003	M		ARCHERY MIXED	.	MW 3		12	3	
4	PEM	003	N		ARCHERY MIXED	.	TT 3		12	6	
7	PEW	007	B		ARCHERY MIXED	.	MW 3		12	5	
9	PEW	007	C		ARCHERY MIXED	.	TT 3		12	6	
3	PEW	009	K		GOLF MIXED	.	MW 3		12	9	
5	PEW	009	L		GOLF MIXED	.	TT 3		12	10	
5	PEW	010	R		TENNIS	.	MW 3		12	12	
7	PEW	010	S		TENNIS	.	TT 3		12	12	
0	PHYS	253			SCI AND SOC	1.	MWF 3		51	53	
3	PS	203			ELR GOVN	1.	MWF 3		65	69	
5	PS	302			JURISPRUDENCE	1.	TT 3		30	28	
1	PS	336			CONT POL PROC	1.	MWF 3		15	7	
8	PSY	203			STAT EXP PROC	1.	MWF 3		45	46	
0	RUSS	103	1		ELEM RUSS	1.	MTWTF3			22	
6	RUSS	302			19TH CENT LIT	1.	MWF 3			3	
5	SOC	307	1		DEV BEHAV	1.	TT 3		20	24	
8	SPAN	302			MOD FICT POET	1.	MTTF 3			10	
9	SPCH	334			DIRECTING	1.	MTWTF3		20	17	

52 COURSES 935 DEMAND 21 CLOSED

COURSES MEETING DURING PERIOD 4

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND
122	ART	311			PRINTS I	1.	MWF 4&5		25	12
124	ART	311A			PRINTS I	0.5	MW 4&5		23	1
126	ART	315			SCULPTURE I	1.	MWF4&5		11	11
136	ART	340			PREHIS & N EAS	1.	MWT 4			34
151	BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15
155	BIOL	241			NAT HIST VERTE	1.	TW 4		24	23
159	BIOL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3
178	CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17
182	CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7
186	CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4
190	CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0
192	CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16
194	CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5
196	CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3
228	ECON	202			PRINCIPLES II	1.	MWTF 4			22
240	ECON	324			MONEY BANKING	1.	MWTF 4			24
259	EDUC	309			LG ART EL SCH	1.	MTWTF4			16
287	EDUC	390			LNG THEC ADOL P	1.0	MWF4W5			36
289	EDUC	391			METH EVAL SEC E	1.0	MWF4W5			35
120	ENG	221	1		INTRO TO POETRY	1.	MWF 4		25	25
121	ENG	221	2		INTRO TO POETRY	1.	MWF 4		20	24
122	ENG	222	1		INTRO TO FICT	1.	MWF 4		25	25
125	ENG	222	3		INTRO TO FICT	1.	MWF 4		25	25
132	ENG	318			AMER LIT II	1.	MTT 4		25	20
34	ENG	323			STUD IN AM LIT	1.	TU 4&5		16	18
63	FR	103	3		ELEM FRENCH	1.	MTWTF4		26	27
69	FR	319			MEDIEVAL LIT	1.	MWF 4			13
86	GEOL	103			GEN GEOL III	1.	MTWTF4			17
13	GERM	326			GERMANY E & W	1.	MTWF 4			6
43	HIST	106	4		WEST CIV	1.	MWTF 4		32	37
53	HIST	303			TUDOR STUART	1.	MTWT 4			4
63	HIST	387			INDIA & S E AS	1.	TT 4			19
76	MATH	102			BASIC MATH II	1.	MTWTF4			22
94	MATH	322			MATH STAT II	1.	MTWTF4			10
02	MATH	349			SEM IN ALGEBRA	1.	MTWTF4			3
17	MS	303	2		JR MIL SCI	0.5	TT 4			6
23	MS	313	2		SR MIL SCI	0.5	TT 4			9
46	MUS	322			FUND OF MUS	0.5	MWF 4		8	3
48	MUS	450			COMP EXAM	1.	MWF 4			2
64	PHIL	212	2		PHIL PERS VALU	1.	TU 4&5		18	18
66	PHIL	212	3		PHIL PERS VALU	1.	TH 4&5		4	4
86	PEM		D		ADV SWIMMING	.	TT 4		18	5
94	PEM	002	H		TENNIS	.	MW 4		12	6
96	PEM	002	J		TENNIS	.	TT 4		12	9
08	PEM	004	G		WEIGHT TRAIN	.	MW 4		15	12
16	PEM	005	V		CHOICE ACTIVITY	.	MW 4		40	25
18	PEM	005	W		CHOICE ACTIVITY	.	TT 4		40	24
51	PEW	006	D		ARCHERY	.	MW 4		12	11
53	PEW	006	E		ARCHERY	.	TT 4		12	12
57	PEW	008	G		BOWLING	.	MW 4		12	12
79	PEW	010	T		TENNIS	.	TT 4		12	12
34	PHYS	123		2	COLL PHYS III	1.	MWF 2	TH 4&5		7
38	PHYS	133		2	GEN PHYS II	1.	MWF 2	TU 4&5		27
36	PHYS	233		1	WAVES	1.	MWF 4	TU 5&6		6

708	PHYS	233		2	WAVES	1.	MWF	4	TH 5&6		6
731	PS	202			ST REG LOCAL	1.	MWF	4		32	36
760	PSY	303			MOTIVATION	1.	MWF	4			22
779	REL	310			BUDDHISM	1.	MWF	4			41
817	SOC	307	2		DEV BEHAV	1.	TT	4		21	21
819	SOC	310			SMALL GROUPS	1.	MWF	4		30	37
836	SPAN	103	3		ELEM SPAN	1.	MTWTF	4			26
857	SPCH	332			ADV ACTING	1.	MTWTF	4		20	13

62 COURSES 991 DEMAND 23 CLOSED

COURSES MEETING DURING PERIOD 5

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND
114	ART	202			DRAWING	1.	MTWTF5		30	32
116	ART	301			ADV DRAWING	1.	MTWTF5		3	3
122	ART	311			PRINTS I	1.	MWF4&5		25	12
124	ART	311A			PRINTS I	0.5	MW 4&5		25	1
126	ART	315			SCULPTURE I	1.	MWF4&5		11	11
134	ART	319	2		CERAMICS I	1.	MWF5&6		20	19
151	BIOL	212		2	MICROBIOLOGY	1.	MWF 2	TU 4&5	15	15
155	BIOL	241			NAT HIST VERTE	1.	TW 4		24	23
159	BIOL	318		2	CELL PHYSIOL	1.	MWF 1	TH 4&5	15	3
178	CHEM	103		2	GEN CHEM	1.	MWTF 1	TU 4&5		17
182	CHEM	103		4	GEN CHEM	1.	MWTF 1	TH 4&5		7
186	CHEM	113		2	ADV GEN CHEM	1.	MWTF 1	TU 4&5		4
90	CHEM	113		4	ADV GEN CHEM	1.	MWTF 1	TH 4&5		0
92	CHEM	203		1	ORG CHEM	1.	MWF 2	TU 4&5		16
94	CHEM	203		2	ORG CHEM	1.	MWF 2	W 4&5		5
96	CHEM	203		3	ORG CHEM	1.	MWF 2	TH 4&5		3
02	CHEM	334			ADV PHYS CHEM	1.	MWTF 5			8
42	ECON	325			PUB FINANCE	1.	MWF 5			23
48	ECON	450			COMP EXAM	1.	TT 5			24
87	EDUC	390			LNG THEC ADOL P	1.0	MWF4W5			36
89	EDUC	391			METH EVAL SEC E	1.0	MWF4W5			35
10	ENG	101	5		FRESHMAN ENG	1.	MTT 5		22	17
12	ENG	201			EXPOS WRIT	1.	MWF 5		22	22
14	ENG	207			BEGIN WRIT-FICT	1.	MW 5		21	23
16	ENG	208			BEGIN WRIT-POET	1.	MWF 5		20	22
18	ENG	209			BEG PLAYWRITING	1.	MWF 5		20	7
24	ENG	222	2		INTRO TO FICT	1.	MWF 5		25	24
34	ENG	323			STUD IN AM LIT	1.	TU 4&5		16	18
67	FR	202			READ FR LIT	1.	MTWTF5			19
88	GEOL	305			IG METAMOR CRE	1.	MTWF 5			5
45	HIST	106	5		WEST CIV	1.	MTWT 5		32	33
59	HIST	333			20TH CENT NEGRO	1.	TT 5		22	22
61	HIST	342			AMER FOR REL	1.	MWF 5		20	22
78	MATH	123			FINITE MATH	1.	MTWTF5			8
86	MATH	301	3		LINEAR ALG	1.	MTWTF5		25	24
92	MATH	316			FOUND OF GEOM	1.	MTWTF5			13
44	MUS	312			INST CONDUCT	0.5	MTT 5			2
31	PHIL	115	2		INT TO PHIL	1.	MWF 5		25	25
34	PHIL	212	2		PHIL PERS VALU	1.	TU 4&5		18	18
36	PHIL	212	3		PHIL PERS VALU	1.	TH 4&5		4	4
38	PEM	002	K		TENNIS	.	MW 5		12	8
00	PEM	002	L		TENNIS	.	TT 5		12	6
20	PEM	005	X		CHOICE ACTIVITY	.	MW 5		40	17
22	PEM	005	Y		CHOICE ACTIVITY	.	TT 5		40	16
18	PEW	010	M		TENNIS	.	MW 5		12	13
21	PEW	010	U		TENNIS	.	TT 5		12	12
14	PHYS	123		2	COLL PHYS III	1.	MWF 2	TH 4&5		7
18	PHYS	133		2	GEN PHYS II	1.	MWF 2	TU 4&5		27
10	PHYS	133		3	GEN PHYS II	1.	MWF 2	W 5&6		6
2	PHYS	223		1	ELEC INSTRUMENT	0.5	M 5	W 5&6		13
4	PHYS	223		2	ELEC INSTRUMENT	0.5	M 5	F 5&6		1
6	PHYS	233		1	WAVES	1.	MWF 4	TU 5&6		6
8	PHYS	233		2	WAVES	1.	MWF 4	TH 5&6		6
7	PS	312			INT LAW & ORG	1.	MWF 5		15	7

777	REL	301		JUD CATH PRET	1.	MWF 5			22
792	RLSS	103	2	FLEN RLSS	1.	MTWTH 5			16
813	SLC	303		URBAN FRED	1.	MWF W7		40	40
855	SPCH	101		PUB SPEAKING	0.5	MTT 5		20	22
861	SPCH	341		TH RENAIS-18TH	1.	MWF 5			11

59 COURSES 881 DEMAND 14 CLOSED

COURSES MEETING DURING PERIOD 6

ID	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME	LAB TIME	MAX SIZE	DEMAND
134	ART	319	2		CERAMICS I	1.	MWFS&6		20	19
155	BIOL	241			NAT HIST VERTE	1.	TW 4		24	23
163	BIOL	361			BIOL SEMINAR	0.5	MW 6			11
200	CHEM	303			SEMINAR IN CHEM	0.5	TU 6			4
269	EDUC	327			SOC ST SEC SCH	0.5	TT 6			12
285	EDUC	369	2		HIST & PHIL	0.5	MWF 6		25	20
359	FR	103	1		ELEM FRENCH	1.	MTWTF6			25
390	GEOL	311			STRUCTUR GEOL	1.	MTWF 6			8
447	HIST	106	6		WEST CIV	1.	MTWT 6		32	33
519	MS	303	3		JR MIL SCI	0.5	TT 6			6
525	MS	313	3		SR MIL SCI	0.5	TT 6			0
659	PEW	008	H		BOWLING	.	MW 6		12	12
669	PEW		N		SWIM PEG-INTER	.	MW 6		15	12
700	PHYS	133		3	GEN PHYS II	1.	MWF 2	W 5&6		6
702	PHYS	223		1	ELEC INSTRUMENT	0.5	M 5	W 5&6		13
704	PHYS	223		2	ELEC INSTRUMENT	0.5	M 5	F 5&6		1
706	PHYS	233		1	WAVES	1.	MWF 4	TU 5&6		6
708	PHYS	233		2	WAVES	1.	MWF 4	TH 5&6		6

18 COURSES 217 DEMAND 1 CLOSED

COURSES MEETING DURING PERIOD 7

D	DEPT	COURSE	SECTION LEC	SECTION LAB	DESCRIPTION	CREDIT	CLASS TIME		LAB TIME	MAX SIZE	DEMAND
38	ART	450			COMP EXAM	1.	TBA				16
65	BIOL	450			COMP EXAM	1.	TBA				23
32	ECON	312			COMPUTER APPL	1.	TBA			10	8
61	EDUC	317			PE IN ELE SCH	0.5	W	7			18
63	EDUC	322			ENG IN SEC SCH	0.5	TU	7			8
65	EDUC	324			MATH IN SEC SCH	0.5	TBA				7
67	EDUC	325			ART IN SEC SCH	0.5	TBA				1
71	EDUC	328			SCI IN SEC SCH	0.5	TBA				3
73	EDUC	345			STUD TCH ELEM	1.	TBA				4
75	EDUC	346			STUD TCH ELEM	1.	TBA				4
77	EDUC	347			STUD TCH ELEM	0.5	TBA				4
79	EDUC	365			STUD TCH SEC	1.	TBA				2
81	EDUC	366			STUD TCH SEC	1.	TBA				2
91	EDUC	450			COMP EXAM	1.	TBA				12
31	ENG	311			ADV WRITING	1.	TBA				2
48	ENG	450			COMP EXAM	1.	TBA				28
73	FR	450			COMP EXAM	1.	TBA				14
92	GEOL	450			COMP EXAM	1.	TBA				3
15	GERM	450			COMP EXAM	1.	TBA				2
26	GRP	122			NON-VIOL DIR	0.5	W	7			51
28	GRP	123			TOPICS-MIL HIST	0.5	SAT				5
65	HIST	450			COMP EXAM	1.	TBA				24
04	MATH	450			COMP EXAM	1.	TBA				13
42	MUS	303			COMPOSITION	1.	TBA				1
63	PHIL	212	1		PHIL PERS VALU	1.	TH	7		22	23
67	PHIL	330			PROB IN ETHICS	1.	TBA				10
69	PHIL	450			COMP EXAM	1.	TBA				1
88	PEM		F		WSI MIXED	.	TBA			12	8
06	PEM		P		RIFLE MARKS	.	TBA			18	19
24	PEM		Z		INTERCOLL ATHLE	.	TBA				50
26	PEM	321			COACH OF FTBL	0.5	TBA				1
28	PEM	322			COACH SW&BSBALL	1.	TBA				1
30	PEM	324			COACH BBALL	0.5	TBA				2
32	PEM	326			ORG&ADM PE&ATH	1.	TBA				2
34	PEM	327			CARE & PREVENT	1.0	TBA				7
71	PEW		P		SWIMMING WSI	.	TBA			15	15
83	PEW		V		PUDDLES	.	TBA				5
85	PEW		W		DANCE CLUB	.	TBA				6
14	PHYS	312			ADV LAB II	0.5	TBA				1
18	PHYS	450			COMP EXAM	1.	TBA				4
39	PS	319			ASIAN AFR GOV	1.	TBA			10	8
43	PS	354			SEM LEGIS BEHAV	1.	TBA			10	6
45	PS	450			COMP EXAM	1.	TBA				27
62	PSY	303A			LAB IN MOTIV	0.5	TBA				11
64	PSY	315			CLIN PRACTICUM	1.0	TBA				5
66	PSY	450			COMP EXAM	1.	TBA				7
98	RLSS	450			COMP EXAM	1.	TBA				0
21	SOC	450			COMP EXAM	1.	TBA				20
37	SPAN	201			INTER SPAN	1.	TBA				1
44	SPAN	450			COMP EXAM	1.	TBA				6
56	SPCH	291			THEATRE PART	1.	TBA				11
62	SPCH	392			THEATRE PART	1.	TBA				2
63	SPCH	450			COMP EXAM	1.	TBA				8
88					ACM-ARGONNE	.					1

398	ACM-NEWBERRY	.	1
399	FRENCH PROGRAM	.	18

56 COURSES 542 DEMAND 2 CLOSED

KNOX COLLEGE

INTER-OFFICE MEMORANDUM

To Dean Salter
Dean Sanville

Date 3-5-69

From George Melville

Subject Spring enrollment

Attached is a breakdown of close-outs after the second pass, classified by class standing. After the first pass we had 362 students (28%) closed out of 429 classes. After cancelling courses and adding sections we had 293 students closed out of 325 courses. Twenty-two and one-half per cent of the students were closed out of at least one course. Table I shows that most of the close-outs can be accounted for by excess demand for eleven classes upon which enrollment ceilings were placed.

I had presumed that a part of the close-out problem is that teachers prefer to teach and students prefer to take courses at the 2nd, 3rd, and 4th periods. In fact only one student was closed out of a 2nd period class. Of 100 students closed out at period 3, ninety-one are accounted for by three courses.

In my opinion the principal benefits of the new system are (1) it allows us to restructure offerings in mid-enrollment on a sound demand basis; (2) it provides a demand basis for future enrollments.

Undoubtedly there will be dispute on the following point, but I like the fact that this type of enrollment is less biased against freshmen. Though course choice is given less weight in rationing spaces than class standing it becomes quite important where upperclassmen do not list a particular course at all. In the gym system an upperclassmen had the opportunity to change his courses before freshmen, and this frequently meant that freshmen were closed out of freshman courses because of the reshuffling of schedules by upperclassmen. Thus a close-out in one course by an upperclassman could cause a close-out in another course to a freshman. The new enrollment has proved one thing; the gym enrollment could not possibly have worked.

TABLE I

CLASSES CLOSING OUT TEN OR MORE
STUDENTS, SECOND PASS,
SPRING TERM, 1969

Instructor	Class	Number of Students Demand	Number of Students Closed	Class Period
JPA	Psy 111	59	14	1
RFA	Anth 201	84	19	1
HP	Phys 253	88	38	3
VD	Hist 201	57	10	3
JDF	Soc 307	63	43	3
ROM	Eng 223	43	28	4 & 5
FBF	PS 202	54	24	4
JDF	Soc 307	37	17	4
HG	Art 202	39	12	5
ESM	Eng 308	30	10	5
HPH	Soc 303	55	15	5
Total.....			230*	

Source: Computer Center, March 1, 1969

*230 of 325 close-outs (71%)

GRANT NUMBER X

CORD GRANT PROPOSAL

Early Classroom Experiences for Elementary Education Majors

Submitted by
Dr. Thelma Tsismanakis
Franklin College
Franklin, Indiana

698

The Franklin College program for elementary education majors now includes two semesters of actual classroom experiences, including some teaching, during the junior year in addition to the student teaching block during the senior year.

This program appears to serve the needs of our juniors and seniors but we recognize that we are not providing any assistance for freshmen and sophomores who may be undecided about their desire to teach at the elementary school level. It is felt that experiences in the elementary classroom early in the student's college career would provide for these freshmen and sophomores the assistance they need for making wise decisions.

The funds from this grant will be used to conduct a pilot study to determine the best procedures for setting up early experiences for freshmen and sophomores so that they may make a more accurate evaluation of their interest in teaching in the elementary school.

A group of twelve second semester college freshmen and sophomores who have expressed an interest in teaching and who are functioning at an acceptable level in their course work will be selected.

The group will be given the Minnesota Teacher Attitude Inventory at the beginning of the semester. With the cooperation of the local public school system, each student will be assigned to an elementary school classroom. During the semester each student will spend a minimum of thirty hours in the classroom. Actual participation in classroom activities and involvement with the children and their activities will be required and will be supervised by the regular classroom teacher.

Each classroom teacher will receive detailed information concerning the college students and experiences required in the classroom stiuation. Individual conferences between the college supervisor and the teacher will help to answer any questions which may arise.

A weekly seminar for the college students will be conducted by the college supervisor, who will also observe each student in his classroom one or two times during the semester. The student will receive two hours of college credit.

At the end of the semester the participants will be given the Minnesota Teacher Attitude Inventory again to determine any changes in attitude, as measured by the test. Observation of the college students, individual conferences, group conferences, and student logs will provide further evaluation of the pilot study.

It is believed that the pilot study will result in the following direct and indirect benefits:

1. Provide the basic information needed to arrange worthwhile early experiences for college freshmen and sophomores.
2. Aid the students involved in making their decisions either for or against teaching in the elementary school.
3. Help the students recognize the relationship between the required courses of the first two years of the liberal arts college and the ultimate professional goals of the students.
4. Provide valuable information for other institutions contemplating a similar program.

BUDGET

Classroom teachers serving as supervisors	$120.00
College supervisor and director of study	260.00
Travel	75.00
Secretarial help	20.00
Supplies -- tests, evaluation forms, postage, stationary, etc.	25.00
	$500.00

GRANT NUMBER X

EARLY CLASSROOM EXPERIENCES

FOR

ELEMENTARY EDUCATION MAJORS

A Report on a Pilot Study

Submitted by

Dr. Thelma Tsismanakis

Franklin College

Franklin, Indiana

702

Introduction

The Education Department of Franklin College conducted a pilot study (a) to determine whether or not it is worthwhile to set up a program of early experiences in the elementary school classroom for freshmen and sophomores so that they might make a more accurate evaluation of their interest in teaching in the elementary school, (b) to determine the best procedures for such a program if it is to be included in the Franklin College curriculum, and (c) to assess any possible changes in attitude toward teaching as a result of the classroom experiences.

At the time of the study the Franklin College program for elementary education majors included two semesters of actual classroom experiences, involving some teaching, during the junior year in addition to the student teaching block during the senior year.

This program appeared to serve the needs of juniors and seniors but did not provide assistance for freshmen and sophomores who were undecided about their interest in teaching at the elementary school level. It was felt that experiences in the elementary classroom early in the student's college career might provide for these freshmen and sophomores the assistance they needed for making wise decisions.

Procedure

A group of twelve college freshmen and sophomores who had expressed various degrees of interest in teaching were selected to participate

in the pilot study which extended over a period of one semester. The group was given the Minnesota Teacher Attitude Inventory at the beginning of the semester. With the cooperation of the local public school system, each student was assigned to an elementary school classroom. During the semester each student spent a minimum of thirty hours in the classroom. Actual participation in classroom activities and involvement with the children and their activities was required and was supervised by the regular classroom teacher.

Each classroom teacher received detailed information concerning the college student assigned to him and also suggestions for the experiences required in the classroom situation. Individual conferences between the college supervisor and the teachers helped to answer any questions which arose. A weekly seminar for the college students was conducted by the college supervisor, who also visited each student in his classroom during the semester. The student received two hours of college credit.

At the end of the semester the participants were given the Minnesota Teacher Attitude Inventory a second time in an attempt to determine any possible changes in attitude, as measured by the test. Individual conferences, group conferences, and daily records of the activities and reactions of the students provided further means of evaluation.

At the conclusion of the pilot study each teacher received a letter and a small remuneration in appreciation of his assistance in the project. A complete summary of the budget may be found at the end of this report.

Results and Discussion

Results of the study seem to indicate that the experiment provided a valuable, worthwhile experience for all the participants despite the differences in grade placement, class standing in college, or grade point averages.

Table 1 gives the names of the participants, their class standing, cumulative grade point averages, and grade placements in the local school system.

Table 1

Names of Participants, Class Standing, College Grade Point Averages, and Public School Grade Placements

Participant	College Level	GPA	Grade
John Glick	sophomore	3.40	6
Chris Grauel	freshman	1.11	6
Jenny Haines	sophomore	3.50	3
Jean Kamback	freshman	1.57	1
Connie Knisley	sophomore	3.75	1
Gloria Kushner	sophomore	2.12	3
Cindy Schroeder	sophomore	1.73	K
Jackie Seward	sophomore	1.83	6
Chris Shaw	sophomore	1.82	2
Tom Stankus	sophomore	2.28	4
Greg Wagoner	sophomore	2.75	4
Sharon Wilson	sophomore	2.23	2

It may be observed that the participants include both freshmen and sophomores, that the grade point averages range from a high of 3.75 (on a 4.0 scale) to a low of 1.11, and that the placements in the public school range from kindergarten to grade six.

Even though the grade placement was not in all cases the one preferred by the college student, this appears to have had no effect upon the final degree of enthusiasm. Similarly, the fact that some were freshmen and others sophomores and that some had achieved at a higher academic level than others seems to have had no influence upon their enthusiasm or performance in the classroom.

The one factor which does appear to have had some effect upon the final evaluation by the student is the degree of actual participation in the classroom. Those students who were allowed to participate fully during a major portion of the time spent in the classroom tend to show a greater amount of enthusiasm for the project than did those who were limited in active participation.

Despite this one disadvantage, the program appears to have served its purpose. Both verbal and written comments from the participants, conferences between the college supervisor and the classroom teachers, and written evaluations made by the classroom teachers indicate that all the college students felt themselves to be in a much better position to make a wise decision concerning their futures.

The best procedures for setting up such a program have been formulated through reactions of college students, classroom teachers, and the college supervisor. In general, the procedures used in the pilot study appear to

be effective. Students expressed satisfaction with grade level placements, with classroom teachers, and with the help received from weekly seminars. The lack of satisfaction with the amount of participation in the classroom, however, indicates that these experiences must be carefully structured and presented to the teachers as requirements if the college students are going to be permitted to be actively involved in the classroom situation.

Table 2 gives the results of the Minnesota Teacher Attitude Inventory.

Table 2

Percentiles on Minnesota Teacher Attitude Inventory Administered at the Beginning and at the End of the Project

Participants	First Percentile	Second Percentile	Degree of Change
John Glick	61	88	+27
Chris Grauel	48	98	+50
Jenny Haines	91	97	+ 6
Jean Kamback	86	85	- 1
Connie Knisley	50	83	+33
Gloria Kushner	42	39	- 3
Cindy Schroeder	73	76	+ 3
Jackie Seward	90	90	0
Chris Shaw	52	90	+38
Tom Stankus	10	70	+60
Greg Wagoner	83	92	+ 9
Sharon Wilson	96	99	+ 3

Results of the MTAI indicate that in most cases the college students had at the end of the pilot study a more favorable attitude toward the profession of teaching. It may be noted that the students who made little or no gains are those who have fairly high ratings in both the initial and final administrations of the inventory and those who demonstrated a very high level of interest in teaching at the beginning of the experiment.

It is recognized that many different factors could account for the variations in percentile ratings at the beginning and at the end of the experiment; therefore, the following comments are included to provide some possible insight into the results.

It is interesting that Chris and Tom, the two students who have the greatest increases in percentile ratings on the MTAI, have decided not to enter the teaching profession. Both of these students entered the semester with a low level of interest in teaching but had the desire to find out if the experience would help them determine just how interested they really were. In this respect, the experience served their purpose. Even though they participated actively in the classroom and even though they considered the experience an interesting and challenging one, they decided that elementary school teaching is not what they desired. Tom was very enthusiastic about his particular classroom and spent many hours outside of class preparing materials for the children. Although Chris indicated that his experience was valuable and interesting, it was not the most pleasant since his lack of a sense of responsibility created some problems for the classroom teacher, the principal, and

the college supervisor. It may be observed in Table 1 that this student was a freshman and had the lowest grade point average of the group.

Jenny, Greg, Sharon, and Jackie, the four students who show very little or no gain in percentile ratings, are in the top seventeen per cent on both administrations of the inventory. All of these students had indicated a strong interest in teaching at the beginning of the experiment.

The decreases in the ratings of Jean and Gloria are very small. Jean's high level of interest initially plus the fact that she comes from a family of teachers may indicate that her attitudes were already formed before she entered the experiment. It is more difficult to attempt to account for Gloria's scores. Comments from both Gloria and her classroom teacher indicate a very high level of performance and satisfaction. At all times she expressed a great amount of enthusiasm and interest in this particular classroom and in teaching in general and has decided that she definitely plans to become an elementary teacher.

John, Connie, and Chris Shaw, all of whom show gains ranging from 27 to 38, present a variety of facts. John, although very interested in elementary school teaching since he enjoys working with children, has decided to get a secondary certificate first and then work for an elementary certificate. Connie has maintained her high level of interest in teaching and plans to continue in the program. Chris, on the other hand, has been forced to withdraw from college for personal reasons but insists that she will return and become a teacher sometime in the future.

Conclusions

From the results of this study it seems apparent that early experiences in the elementary school classroom do serve the purpose of helping the potential elementary education major make a more accurate evaluation of his interest in the teaching profession. For this reason, courses involving the experiences described in this report have been scheduled for both semesters during the coming school year at Franklin College.

It has been concluded from the pilot study that most of the procedures used in the experiment were successful and will be incorporated into the course planned for the first semester. The one area in which improvements will be made concerns the problem of making certain that the college student becomes actively involved in the classroom activities. It was found that some of the teachers either were not adequately motivated or did not know how to involve the student, and as a consequence the student spent too much time merely sitting and observing and not enough time actually working with the children. For this reason, the instructions and suggestions given to the teacher will be more carefully designed and more structured during the approaching semester.

Because of the results of the MTAI and evaluations made by both college students and classroom teachers, the research director has concluded that attitudes toward elementary school teaching are definitely influenced by the active participation in the classroom situation. This leads one to the possible conclusion that the greater the amount of active

participation in the classroom the greater the opportunity for the college student to make a wise decision about his career.

Even though the class standing of the student does not seem to account for any noticeable differences in enthusiasm or performance, it has been decided that the program probably has more to offer the sophomore rather than the freshman. This appears to be a sound conclusion since the Franklin College freshman's program of required courses leaves little time for this education course. On the other hand, the fact that the sophomore is closer to the need to make a decision concerning his major may possibly make the course more useful at his level. The continuation of this project during the coming year will no doubt furnish additional data for answering this question and others.

Summary of Budget

College supervisor and director of study	$260.00
Classroom teachers serving as supervisors	120.00
Travel for supervision and research	75.00
Secretarial help, supplies, etc.	45.00
	$500.00

GRANT NUMBER XI

SEED GRANT PROPOSAL

EXISTENTIAL MODES OF LEARNING

Robert Shellenberger

Knox College

EXISTENTIAL MODES OF LEARNING

Problem and Purpose

The purpose of this project will be to develop and evaluate existential modes of learning. The following assumptions are made in regard to the need for such a task:

(1) Rational behavior is good (an ideal to attain).

(2) "Rational behavior" refers to a cluster of dispositions such as the ability to express oneself in a coherent and systematic manner, the tendency to remain open to opposing points of view, the ability to perceive the appropriate evidence for a particular purpose or problem, and the tendency to constantly examine one's behavior and thought.

(3) There is a need to develop modes of learning that are conducive to the developing of dispositions that manifest rational behavior.

(4) Existentialism and Phenomenology provide a conceptual framework for developing modes of learning that are conducive to the development of rational dispositions.

(5) Existentialism and Phenomenology have not developed and evaluated modes of learning.

Method

I will be teaching two sections of the course Existentialism and Phenomenology during the winter term. In the one section, I will use the traditional methods of lecture and discussion. In the second section, I will develop and use existential modes of learning. Existential modes of learning involve some of the following features: (1) There is a total involvement of the individual

including his emotional and physical dimensions. (2) One strives for the smallest possible time-gap between one's behavior and one's reflection on that behavior. (3) There is feed-back to an individual in regard to his own behavior as perceived by others. (4) The learner must be a direct participant in the learning situation. One example of an existential mode of learning that will be used is socio-drama. Through such a method one will attempt to mirror real-life situations e.g. a conflict between black students and white students as they walk into a lunch room.

Both sections will be on satisfactory-unsatisfactory. They will be using the same subject matter, namely, Existentialism and Phenomenology. The members will consist of Knox students who have chosen to take the course. Section one has 17 members. Section two has 34 members. Consequently, section two will probably be divided into two groups consisting of 17 members each.

Evaluation Procedures

Three methods of evaluation will be used. To help me effectively develop and use them, an upper class psychology major will assist me. The three methods of evaluation are the following:

(1) A standardized test will be given each member at the beginning and at the end of the course. This test will be the Omnibus Personality Inventory. The scales that will be particularly relevant are: thinking introversion, theoretical orientation, autonomy, impulse expression, social introversion, repression and suppression, and nonauthoritarianism.

Given the theoretical framework of Existentialism and the development and application of existential modes of learning, for section two the following predictions would be made: a decrease in thinking introversion, greater autonomy, an increase in non-authoritarianism, a decrease in repression and suppression, and an increase in theoretical orientation.

On the basis of the test results, an attempt will be made to see if a significant statistical interpretation can be made in regard to the two sections.

There were several reasons for choosing the OPI. One was its high degree of reliability. In Buros, The Sixth Mental Measurements Yearbook, the following was stated:

> The reliability coefficients of the various scales, Kuder-Richardson 21 estimates, vary from .71 (Complexity) to .93 (Repression-Suppression), with a medium coefficient of .84. Inasmuch as these calculations are based upon responses by more than 2,000 subjects, these reliability estimates must be viewed as extremely stable.[1]

A second reason for choosing this test was the stability of its scales over a period of time. "Although more evidence is needed, it would appear that most scales are sufficiently stable to permit their use where one is interested in intraindividual comparisons over time."[2]

(2) An interview will be given each member at the beginning and at the

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[1] Paul M. Kjeldergaard as cited in Buros, The Sixth Mental Measurements Yearbook, Section 150.

[2] Ibid.

end of the course. A questionnaire will be developed to ensure consistency in the questions of the interviewers.

(3) Each member will be asked to write a type of autobiography. In the autobiography, the individual will attempt to elucidate those events which were most significant to him during the winter term.

Significance

If the evaluation is done well, I think the most general significance of the project will be that it is informative as to what learning situations are more effective in developing rational modes of behavior. Also, it will provide a way of evaluating the theoretical concepts of Existentialism and Phenomenology. Hopefully, this evaluation will be included in a book on Existential Modes of Learning that I will be developing. Finally, it is hoped that through this pilot project some skills of evaluation will be developed so that this approach can be expanded to other courses in philosophy as well as other courses in the humanities and social sciences.

Conclusion

A detailed report will be made on the results of this pilot project, indicating the value of this project for further study and the kind of modifications needed to develop such a study.

Robert Shellenberger

GRANT NUMBER XI

FINAL REPORT

AN EXPERIMENT IN EXISTENTIAL MODES OF LEARNING

Robert Shellenberger

Knox College

December, 1969

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AN EXPERIMENT IN EXISTENTIAL MODES OF LEARNING

Purpose and Participants

The purpose of the experiment was to develop ways of evaluating existential modes of learning with the hope of discovering a methodology that could be duplicated and applied in a precise manner. The methods of evaluation to be explored were (1) interviews before and after the course, Existentialism and Phenomenology, (2) autobiographical reports, and (3) the Omnibus Personality Inventory before and after the course. Two assistants were hired to help with the interviewing, the giving of the O.P.I. tests, and the assembling and evaluating of data.

The participants were members of sections one and two in Existentialism and Phenomenology. Participants were accepted according to the standard criteria for enrolling in a course at Knox College--course preference, class rank, etc. Section one consisted of 15 students who met from three to five days a week in the morning from 10:50 to 12:05. Section two consisted of 38 students who met in the evenings, one to three times a week. The length of the meetings varied from one to five hours.

The Learning Environment of Section Two

In the first meeting on a Wednesday evening in Room 45 in the C.F.A., I described the type of environment I wished to create. The first characteristic I emphasized was that the participants would be the authority for their own behavior. It would be their decision what they should do this term in this course. The second characteristic was that my role was to provide them with

various resources to help them in their growth. The only requirements would be that they do satisfactory work on an ontological autobiography and co-operate in the interviews and Omnibus Personality Inventory. (The ontological autobiography is a written essay in which each student describes what decisions and events have been of most significance for him. I have found that an ontological autobiography is an excellent form of expression for clarifying one's presuppositions about reality, knowledge and value.)

I also explained the following ways in which I perceived I could be a resource for them:

(1) Provide three different environments involving existential modes of learning.

(2) Send each individual a bibliography of readings in existentialism and phenomenology.

(3) Put on reserve in the material arts center audio-tapes of my lectures on Existentialism and Phenomenology that I gave in the morning section.

(4) Have two assistants and myself be available in helping the individual evaluate his progress as well as set up new environments if the ones provided by me were not adequate.

I described to them the following characteristics of existential modes of learning that would be emphasized with different degrees of intensity in the three types of environment: (1) The individual is the authority for his own behavior. (2) There is a total involvement of the individual including his emotional and physical dimensions. (3) There is feed-back to an individual in

regard to his own behavior as perceived by others. (4) The individual must be a direct participant in the learning situation. (5) One strives for the smallest possible time-gap between one's behavior and one's reflection on that behavior.

Three different types of environment were then described for them and I took the names of the individuals that were interested in the various groups.

I now wish to describe briefly the nature of these three types of environment and what happened in them.

Existential Concepts. In this group there were two leaders, myself and a senior philosophy major. All 38 members of the evening section signed up for this group so we divided into two groups. A major concern in these groups was to help individuals translate ideas into concrete behavior. (I had become convinced for several reasons that individuals for the most part do not know how to translate research results into the organization of concrete behavior in their particular environment.) A second concern was to understand new concepts by concretely acting out certain patterns. Consequently, for the first part of the term we would describe certain concepts to the individual either through handing out reading material several days before the session or explain the concept to them that night. Then, we would try to get the individual to conceive of ways of applying this concept to his immediate environment. For the second part of the term, we would act out certain concepts and then discuss the significance of one's behavior. The existential concepts we explored in this way were: the individual as autonomous, loneliness, solidarity, alienation, care, body as subject, body as object, master-slave rituals in learning environments, master-slave rituals in male-female interaction, commitment, social responsibility, and bad faith.

Two illistrations of how we proceeded are the following: For the first night I described briefly what was meant by the individual as autonomous in existential literature. Then we divided into two groups to discuss behavioral implications of this concept and act out ways that manifested or did not manifest this concept. In both of our groups we simply discussed this concept for 2 and ½ hours. In the middle of the term, we explored the concept of master-slave rituals in learning environments. One night we played the authoritarian classroom game without previous explanations of the concept. After the game was over we divided into small groups and reflected on the event.

Socio-Drama. Jacob L. Moreno, one of the first exponents of socio-drama, defines socio-drama as a method dealing with inter-group relations and collective ideologies. (Who Shall Survive? Foundations of Sociometry, Group Psychotherapy and Socio-Drama, pp. 87, 89) He states the underlying assumptions of socio-drama are:

(1) Man is a role player and that every individual is characterized by a certain range of roles which dominate his behavior.

(2) Every culture is characterized by a certain set of roles which it imposes with a varying degree of success upon its members.

(3) The purpose of socio-drama is to bring a cultural order and its corresponding presuppositions to conscious awareness by dramatic methods.

(4) To explore and resolve conflicts which have arisen between two separate cultural orders.

The socio-drama group consisted of 8 black students and 8 white students. Each individual was asked to make a commitment to attend all the sessions

until the end of the term. Also, it was explained that the goal was for no one person to be the leader but for each individual to contribute to the leadership of the group.

The group met once or twice a week throughout the term and had one session after the term with some people from the Galesburg Community. (The last meeting was requested by the individuals from the Galesburg Community.) Several sessions were tape-recorded. One session was video-taped. Many dramatic situations were acted out and then reflected upon by the group such as Gizmo encounters between black and whites, an Urban Renewal meeting interrupted by Black Panthers, a school board meeting, a Baptist Church Service, etc.

Non-directive. Only two individuals signed up for this group. The one individual had studied a considerable amount of Zen Buddhism and was especially interested in comparing Zen Buddhism to Existentialism. The other individual also expressed an interest in studying Zen Buddhism and Existentialism. They met once or twice a week together. I met with them four times during the term. Also, I had several discussions with the individual who was interested in comparing Zen Buddhism to Existentialism. (Both members were also in Existential Concepts and one was also in Socio-drama.)

The Learning Environment in Section One

The first meeting the group had was taking the O.P.I. The remainder of the term the meetings on MWF were lecture and discussion. Readings were assigned. There was a mid-term exam and two papers were required after the mid-term.

During the second week of the term several members had heard about some of the methods used in the evening group and also wished to use them in the morning group. I stated that this would ruin my experiment of having two different control groups. They in turn replied that they would be missing out on some experiences that they believe would be valuable. We did not resolve the conflict that day.

Next week I found out that some of the members of the class had already been doing some of the methods that we had been doing in the evening group. Consequently, we discussed the matter in class and I then stated that since some of them had already been doing these methods similar to the evening group that on Tuesdays and Thursdays we would do some of the methods for those who were interested. As a result, we did some socio-drama, acted out some existential concepts and had some non-directive sessions.

Evaluation

By using the O.P.I.'s, interviews, and autobiographies we were attempting to see if we could determine that the evening group had become more proficient than the morning group in fulfilling the following criteria: (1) The individual is open to opposing points of view. (2) The individual is skillful in applying concepts to his immediate environment. (3) The individual is critical of his own behavior and thought. (4) The individual is self-directive in the sense of taking initiative for his own growth and learning. (Henceforth, reference to these criteria will be made by their numbers (1), (2), (3), and (4).

By setting up two different groups, the attempt was made to achieve control over the dependent variable, namely, the different methods of teaching in the evening group. However, the morning group originally set up as a control group lost that potential because of the feed-back from the evening group to the morning group and because of the usage of some of the same methods by members of the morning group as the evening group. Therefore, control was lost over the dependent variable and a statistical comparison seemed to be absurd. However, I believe the interviews and autobiographies still point in a significant direction that existential environments take. The O.P.I.'s were still given at the end of the term for those individuals who wanted to compare their last O.P.I. to their earlier O.P.I.

I now wish to describe the interpretations of the data received from the interviews and autobiographies in regard to the socio-drama and existential concepts. I then wish to make some concluding evaluatory remarks.

Socio-drama. Twelve of the sixteen individuals in their autobiographies described various events in the socio-drama group as having positive significance for them. All of their descriptions fall under criteria (1) or (3). For example,

> Before the class I had mixed emotions about whites. I feel that pretty much of this was due to the fact that I went to high school with a majority of white students. They had cliques, were snobbish, rude, and silly. They were middle class and didn't care about what the blacks did. The only reason they knew who we were was because of our color or when they were doing something against us (the blacks). Now after the class I feel different because I have met whites on a personal level, on the same level. I like whites an awful lot more than I used to and I find that some of the things said harshly about whites is untrue just as things said about blacks that aren't true that I hope the whites found out also. All in all the class was very enlightening and should be continued.

It was in regard to such statements as the above that I perceived that some individuals were becoming more open to the presuppositions of other cultures and individuals as well as becoming more aware of their own presuppositions.

Four of the sixteen individuals in the socio-drama did not mention or discuss the socio-drama in their autobiographies.

In the interviews, eleven of the individuals perceived themselves as growing in standards one and three. A typical comment was that "I got a lot of information about myslef and others." Three individuals perceived themselves as learning a lot about the other culture group but not about themselves. One individual stated that he did not know how to evaluate his experience. (One individual stated that this was the most significant learning experience she ever had.)

Existential Concepts. In the autobiographies, 16 made positive statements about the way in which they had grown through existential concepts, three made negative statements, 19 did not mention existential concepts. The negative comments were of the form that the concepts seemed obvious and mundane, or it was disappointing because nothing happened, or the participants were uncreative. Of the 16 positive reports, six of the individuals made statements that would fall under criterion (4). One individual described how he believed that he had for the first time made a decision by himself rather than accepting what someone told him to do. Twelve individuals made statements that would fall under criterion (2). For example, in one Autobiography the expression was one of dialogue with herself in which she stated the following:

> It was that day you went to concepts and discovered "autonomous man." For the first time, you really saw the hang-up that all your life you cared too much about other people's feelings toward you. It stifled you; made you miserable because you wanted to like people, but had to hate them, because you were afraid of their opinions; made you something else, an other-image, not yourself. Bob said, why not love yourself, you're beautiful, you can't change what you are right now, if someone criticizes you--in malice, unconstructively--well, that just shows where they're at. Clem rapped on "accepting your human condition." being aware of your futuricity. You saw it, so simple, and so incredibly hard to feel and believe. But you did believe, and you felt. You went to a social-drama session. A hell of a high. All those people, Podesta, May, Ahmed, Rick--you'd felt inferior to them, afraid of them. But now that was all gone. You could be yourself and not care what you looked like. People noticed the change--liked it.

In such statements like the above, we concluded the individual had applied a concept to her own personal environment.

In the interviews about existential concepts, 18 individuals gave a positive evaluation in the sense of criteria (2) and (4). (One individual said that this was the best course she ever had.) However, 15 individuals were rather indifferent about existential concepts and would state that they did not know how to evaluate it, or they were not sure if they had grown in any significant way, etc. Five individuals gave negative evaluations such as the concepts were obvious, or it was disappointing, or they had not grown as a result of the course in any of the four criteria.

My evaluation. On the basis of the interviews and ontological autobiographies, I believe that the socio-drama helped individuals grow in regard to criteria (1) and (3) through bringing to conscious awareness the presuppositions of a cultural order as manifested in the roles of individuals and groups. I think for some individuals it was also an environment which

facilitated the resolution of conflicts which arise between two separate cultural orders. However, precise data is lacking as to the extent of their growth in comparison to other learning methods. To obtain more precise data one must find a way of eliminating the feed-back that occurs between two control groups at a small college. Maybe one should have one control group at one college and another control group at another college. Also, I became increasingly more sensitive to how difficult it is to determine how one can obtain a precise measurement when one is dealing with a situation where there is only control over a small part of an individual's experience e.g. shaping the environment two evenings a week. Consequently, I am skeptical that the method of comparing two groups can provide the necessary control over the dependent variable so as to make a statistical comparison significant. As a result, I have been looking for other modes of measurement to evaluate the modes of learning in a more precise way. If such methods can be obtained, I think applying these methods to socio-drama situations would be worthwhile.

I am less certain on the basis of the autobiographies and interviews as to whether or not a course in Existential Concepts is worthy of exploring with more precise tools. A greater percentage of individuals in this group seemed to be indifferent in regard to its effect upon them. And, I suppose the other reason is that many of the methods used in that section do not seem that different from traditional methods of lecture and discussion. Several of the positive reports as to the value of existential concepts was the explanation of a concept and discussion of it. This of

course is done quite often in traditional forms of education.

In spite of the inability to come up with a precise form of measurement in this experiment, I find it imperative to continue to explore more precise forms of evaluation with the help of educational consultants.

GRANT NUMBER XII

Reading and the Rural Educationally Disadvantaged Children

Proposed by Dr. Ruth Holland
Professor Elementary Education
Franklin College
Franklin, Indiana

PROPOSAL FOR A SEED GRANT

Reading...and the Rural Educationally Disadvantaged Children

BACKGROUND

Educators are now aware of the fact that cultural backgrounds and experiences are definite factors which effect and influence the way children learn. The evidence indicates that children of low social-economic sub-culture groups are at quite a disadvantage in the formal learning situation. A vast amount of educational research has been done in the search for more effective ways to help the educationally disadvantaged children. However, very little has been done to survey and evaluate this research in order to guide future projects in the area of teaching reading. In order to assure all disadvantaged children a chance to learn to read, it appears that several things need to be done before adequate instruction can be assumed.

PURPOSE

The purpose of this seed grant is to search out, record, and itemize all of the research which has been done in the area of teaching reading to the educationally disadvantaged children in rural areas of this nation. A bibliography will be made of all research projects, both past and current. In this way future researchers should be able to evaluate what has been done, note trends, and plan future projects in reading with more clarity and efficiency.

PROCEDURE

An entire survey will be made through the ERIC/CRIER Information Center at Indiana University. A portfolio of bibliographies listed will be researched and recorded. As time and resources permit, the search will continue, using such sources as the ERIC Document Reproduction Service, Bethesda, Maryland, University Microfilms in Ann Arbor, Michigan, and the United States Government printing office in Washington, D.C.

Budget

Secretarial Help (4 hrs per week for 16 weeks)	$ 96.00
Materials from ERIC and other sources)	100.00
Travel to and from Bloomington (8 trips)	80.00
Materials and printing of report	50.00
Postage and Miscelaneous	25.00
	$351.00

GRANT NUMBER XII

FINAL REPORT

Project Number: 7-E-178X

Grant Number: OEG-1-7-070178-4299 (010)

RESEARCH IN READING

Submitted by

Dr. Ruth Holland,
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August 12, 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely theri professional judgment in the conduct of the project. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.

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Research in Reading

The purpose of this particular research project was to determine the extent of the research projects in the area of reading which had been initiated with white children living in the rural disadvantaged areas in the United States.

In order to determine a workable definition of the poor, rural disadvantaged families, the researcher chose to use the data published by the Social Security Administration.[1] This definition was developed on purely arbitrary income data. The index took into consideration such factors as family size, number of children, type of residence (farm - non-farm), and amount of income. The United States Bureau of the Census defines rural areas as farm and non-farm; farms include plots of less than ten acres which yield an income of at least $250 or more, or more than ten acres with an income of $50 or more per acre.[2]

Poor white people are generally divided into three major groups: 1. those living in inner city ghettos; 2. those living in self-sufficing rural areas of the United States, and 3. those living in typical small towns throughout the nation. As these groups represent the great majority of American poor whites, this research paper will concentrate on the latter two groups, with special emphasis being placed on the last category mentioned.

Persons with Spanish surnames were included in the census

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[1] Rural Poverty in the United States, Washington, D.C., Presidents' Advisory Commission on Rural Poverty, 1968.

[2] Current Populations Reports, Series P-20, No. 54, Washington, D. C., Government Printing Office, 1968

of the white population. In order to further limit the scope of this research paper, it was necessary to exclude the following groups of poor whites: 1. research done with Spanish speaking migrant children,and 2. research completed in the southern Appalachian region. A bibliography of research on migrant children is included in Appendix I. Research from the Appalachian region is found in Appendix II.

The United States Department of Agriculture estimates that 29.7 million persons were living below the poverty level. Of these, 20.1 million, or two-thirds of the nations' poor, were white. Of this number, one-third (nearly seven million) are children under the age of eighteen.[3]

The large group of disadvantaged white people is dispersed among the thousands of small towns with populations ranging from a dozen families clustered together to those of 50,000. These towns share populations the social scientists describe as lower and lower-lower class.[4] Whites in this social stratification comprise about 15 to 20 percent of the town's population.

At least two types of disadvantage mold the characteristics of the children of poor white families in the small communities: 1. the substandard housing and living area and, 2. "social distance." Social distance seems to be a sociological feature which distinguished the disadvantaged white population from other members of the community. This particular life style

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[3] Reading for the Disadvantaged: Problems of Linguistically Different Learners, Edited by T. Horn, I.R.A., 1970.

[4] Social Stratification: Class in America, H.M. Hodges, Jr., Schenkman Pub. Co., Cambridge, Mass., 1964, Chap. 4.

indicates there is very little social interaction with other groups outside the immediate family. Consequently, a social atmosphere of strife-ridden authoritarian homes, where parents who are poorly educated, give children from these homes a pervasive feeling of hostility and despair. As a result, there is a pronounced social distance between them and others in their community. Also, poor whites have very little identification with "a cause." They have no NAACP or CORE program to call attention to their particular plight. However, poor white children from a small town does have one major advantage. These children seem to have a greater chance of breaking out of their environment than do poor white children in other environments.[5]

Thus, it is imperative to determine what research has been done, in the academic area of reading, in order to enhance the possibilities of improving the children's educational background so they may have the opportunity to successfully seek and obtain a full, richer life.

The reading research projects which were structured and designed for use with rural, disadvantaged white children are listed on the following pages.

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[5] Reading for the Disadvantaged: Problems of Linguistically Different Learners, Edited by Thomas D. Horn, International Reading Association, 1970.

Research Data

Bender, Martin I., "A Vocabulary Pre-kindergarten Language Development and Reading Program for the Entire Four-Year-Old Population of a City," (An Investigation of Machine-Taught Reading), Mount Vernon Public Schools, New York, 1968.

The Editon Responsive Environment System (ERE) was used, with the aid of computer assisted instruction, to teach early reading techniques to young children in both the urban and rural sections of the city.

Language development was a part of the total program. Emphasis was placed on programed instruction, reading readiness, and story telling by an automatic programing device (automatic reading tutor.)

Brtwistle, Doris R., "Subcultural Differences in Children's Language Development," John Hopkins University, Baltimore, Md., 1967 ED 011 612

The author attempted to evaluate environmental differences. and environmental influences of rural and urban children. He was especially interested in comparing rural and urban differences of young children in the area of language and vocabulary development.

The culturally disadvantaged were interviewed. Differences were noted in the areas of language ability. Linguists noted racial differences as well as socio-economic factors which contributed to language deficiency.

Sociolinguistics may be a future area in which to study the various facets of language disabilities. The socio-economic level of the family seems to be a direct factor which contributes to verbal or language development, or the lack of it.

Carlton, Leslie, and Robert E. Moore, "A Study of the Effects of Self-Directive Dramatization on the Progress in Reading Achievement and Self-Concept of Culturally Disadvantaged Elementary School Children," Illinois State University, Normal, 1965. ED 003 692

The effects of a technique on the reading achievement of disadvantaged children was studied. The children involved came from two schools in a low socio-economic area. Grades one through four were involved in this study. The experimental group received instruction by self-directive dramatization techniques. The control group was given instruction in the basal reader.

The major conclusions were: 1.Significant gains in

reading were achieved by the four grade groups which were using the self-directive approach, and 2. The self-concepts of the culturally disadvantaged children seemed to be more favorable.

Cramer, Ward and S. Dorsey, "A Summer Developmental Reading Program for Rural Students," The Reading Teacher, 22: 710, May, 1969.

The authors admitted 103 children in grades four through eight into this summer reading program. Children were admitted if they were not reading up to their potential.

The program was conducted in the Twin Valley School District in Ohio. Instruction was given in groups of 15 or less, three hours a day, five days a week for five weeks. Instruction was individualized as much as possible. Many audio-visual materials were incorporated in the program such as films on reading, recordings, and film strips. A wide selection of printed materials were used.

The authors reported "a rewarding improvement" from preceding reports of the childrens' achievement. Even more important, they reported a marked improvement toward school, reading, and self, when the summer had ended. As a group, they appeared to be free from many anti-social tendencies and had improved attitudes toward their own families.

Cazden, Courtney B., "Subcultural Differences in Child Language - An Inter-Disciplinary Review," Merrill-Palmer Quarterly of Behavior and Development, 12, 1966.

The ways language is used by children in various subcultural groups was studied. The author wanted to determine whether the language of any group could be considered deficient by the use of some criteria or other.

Methods of describing nonstandard English in terms of errors, contrast, and transformational grammar was discussed. These methods were arrived at by studying and evaluating research in linguistics, developmental psychology, sociology and anthropology done with children of different social classes.

The author suggested a child's language development be evaluated for progress toward the norms of his particular speech community. The importance of inter-individual and intra-individual modes to studies of subcultural differences in child language was stressed.

Crockett, Walter E., "Effects of Age, Social Status, Sex, and Race Upon the Understanding of Word Meanings Independent of Sentence Context," Clark University, Worchester, Mass., 1966. ED 010 381

Individual differences which affect the ability to acquire word understanding was the primary intent of thie research. Twelve different groups were formed at the various grade levels. These groups were made up of children from various socio-economic level homes such as: white middle class, Negro lower status, and white lower status.

According to the author, middle-class children showed higher levels of verbal output than their low-status peers. This was consistent with the differences placed on verbalization by the people in different social classes.

Also, there was significant difference, favoring the girls, in the use of word-sentence fusion.

Cohen, Dorothy, "The Effect of Literature on Vocabulary and Reading Achievement," Elementary English 45:209-213, March, 1968.

This program was designed to increase the vocabulary, motivation and pleasurable reading experiences of 285 second graders who were classified as non-motivated culturally deprived children.

Both control and experimental groups used a basal reading text. The experimental group had a book read to them every day. These were selected for emotional identification, as well as concepts and language they could understand.

The final results, as measured on the Free Association Vocabulary Test, showed the experimental group was quite superior in vocabulary.

Criscuolo, N.P., "Enrichment and Acceleration in Reading," Elementary School Journal 58:142-146, December, 1967.

The author investigated the effectiveness of basal readers in the lower middle and lower-lower class areas of New Haven, Conn. Eighty-seven third graders were selected. One group was guided through an enrichment study using the Houghton-Mifflin basal readers; then selected students were accelerated.

The author concluded that culturally disadvantaged children show most growth when using a basal reader and following all the lessons prescribed by the authors of the text.

The enrichment program produced greater gains in reading

achievement, mastery of basic skills, and a greater amount of independent reading was engaged in at various stages.

DiLorenzo, Louis T., and Ruth Salter, "An Evaluative Study of Pre-kindergarten Programs for Educational Disadvantaged Children: Followup and Replication," Exceptional Children 35:111-119, October, 1968.

The subjects were 1,235 children from eight districts in the state of New York. The Warner Scale was used to divide the children into the "disadvantaged" group.

In this research project, the answers to four questions were sought: 1. Was the pre-kindergarten experience effective for disadvantaged children? 2. What type of program was more effective? 3. Was this experience equally effective for boys and girls? and 4. Was it equally effective for whites and non-whites?

The authors indicated that data drawn from the first two years of research tended to reveal that specific and structured cognitive activities produced the greatest number of significant differences for whites during these years.

In areas where definite interaction was stressed between advantaged and disadvantaged children, no significant difference was found.

The effectiveness for girls versus boys was conflicting. Girls seemed to show a recognized superiority on verbal aptitude scales.

The pre-kindergarten experience was more effective for disadvantaged whites than for non-whites.

Elkind, David, "Reading Achievement in Disadvantaged Children as a Consequence of Non Verbal Perceptual Training," Rochester University, Rochester, N.Y., 1968

The children in grade two were given a series of instructional lessons and directives in the area of non-verbal learning, sensory training, and visual perception. Concentration was then directed to word recognition and reading comprehension.

The authors were inconclusive as to the total effect of this particular part of the research project.

Entwisle, Doris R., "Subcultural Differences in Children's

Language Development," John Hopkins University, Baltimore, Md., 1967. ED 011 612

Patterns of the linguistic development of children of different socio-economic environments were determined by a study of word associations. The relation of residential areas, social class, or subcultural group membership to linguistic development was studied.

Each group was categorized according to I.Q. level, sex, and grade. The word associations were obtained in response to a list of 96 stimulus words. Each child was interviewed alone. He was asked to respond orally to the word shown by the interviewer. This word was to be the first one that came into his mind when the child heard the word.

From the findings, the author concluded that little difference could be found between middle class children and children from "blue collar" families. Also, rural children in this study tended to develop more slowly than suburban children, especially those whose I.Q. was average or below.

An interesting finding was that white slum children were advanced compared to surburban children at first grade, but were retarded by the third grade.

Karnes, M.B., and Audrey Hodgins, and James Teska, "An Evaluation of Two Pre-School Programs for Disadvantaged Children: A Traditional and a Highly Structured Experimental Preschool," Exceptional Children 34:667-676, Oct. 1968.

This study was designed to evaluate the effectiveness of two pre-school programs upon the long range school performance of comparable groups of children. The first intervention provided a traditional school experience which provided ways to improve the personal, social and motor development. The second intervention provided a highly structured program which focused on specific learning tasks which were especially designed to remediate learning deficits by promotion of language and cognitive development.

The daily program was centered around three areas: 1. language arts and reading readiness, 2. mathematics concepts, and 3. social studies and science. Language development received major emphasis during the day. Verbal responses in conjunction with manipulating concrete materials were considered to be the most effective means of establishing new language responses.

Sixty children enrolled the first year. Each program was two hours and fifteen minutes a day for seven months. The children came from depressed areas in central Illinois.

The authors concluded that the children in the traditional program made "very real progress" while the experimental group showed superior performance and high gains on the test scores. "Because cognitive development at more complex levels hinges on the existence of verbal experience, abilities, and so on, the language deficit of the disadvantaged child is of critical importance." p.676.

Klosterman, Sister I., "The Effectiveness of Student Tutors Employing Diagnostic and Small Group Techniques in Fourth Grade Reading in a Low Socioeconomic District," Dayton University, Dayton, Ohio, 1967.

Elementary schools in disadvantaged sections were given reading instruction, both group and individual. Student teachers were involved in the teaching process and were used as tutors.

The author indicated that individual and small group instruction seemed to be highly advantageous when working with children who come from low socio-economic environments.

Litwok, Eugene, "Relationship Between School-Community Coordinating Procedures and Reading Achievement," Center for Advanced Study in Behavioral Sciences, University of Michigan, School of Social Work, 1966. ED 010 376

The relationship of the school and community to reading achievement was studied here. "A Balance Theory of Coordination" was used by administering questionnaires and survey interviews of a sample of 4,402 people.

The members of the community involved consisted of children from 18 elementary schools, parents, and teachers.

A summary of the major points seemed to indicate that primary groups, "bureaucratic structures (schools!)" and their linkages must be understood in order to interpret and further understand academic performance of the children attending the school.

Los Angeles City Schools, Los Angeles, California, "A Progress Report of Experimental Programs Funded Under Auspices of McAteer Act of 1963.

In six schools in culturally disadvantaged areas, classes were held where special instruction was provided in the areas of

remedial reading, language arts, library activities, individualized tutoring and student leadership in clubs to encourage interest in special areas.

The purposes of the basic reading program were to improve teaching methods, instructional materials, and equipment. The after school library program provided facilities for students to study, and assistance was given in the use of reference materials, independent reading, and other related library activities.

The evening counseling program offered additional counseling services to students who entered special schools, were potential dropouts, or were academically talented. Another goal was to improve communication with parents of these students and to strengthen educational and vocational planning. The school-community coordination program provided immediate personal assistance to students new to the school and community. It also attempted to encourage active interest of parents in their child's education and in community activities.

Evaluation of the project indicated that the classes helped change pupil's attitudes, and helped develop self-confidence and security. A four-phase program designed to give additional services in the areas of basic reading, after school library service, evening counseling, and school-community coordination activities.

Malpass, Leslie F., and others, "Programmed Reading Instruction for Culturally Deprived Slow Learners," MacDonald Training Center Foundation, Tampa, Florida, 1966. ED 111 065

The effectiveness of programmed instructional materials for teaching basic reading skills to slow learning, culturally deprived children between the ages of six and nine were evaluated in this research project. This study was done to determine what modifications of materials would be needed for these particular children.

The 45 children involved were divided into three groups. The experimental group was divided into two sections; one taught by machine and the other by programmed workbooks. The control group was taught by traditional classroom techniques.

The major concentration was in the area of programming lessons in vocabulary development. As a result, vocabulary gain for the machine-taught group was greater than either of the other two groups.

The authors concluded that programmed instructional materials tend to increase reading skills. The children were taught more words in a relatively short period of time by teaching machines.

Martin, John H., "Freeport Public Schools Experiment on Early

Reading Using the Edison Responsive Environment Instrument," Responsive Environments Corporation, New York, N.Y.

Objectives were listed and the main one was to determine whether a technological device could teach five-year-olds to read. Also included were objectives such as: What intelligence ranges would be needed for the instrument to be effective? Would Negro children benefit from it? Could the mentally retarded be taught to read with it?

The subjects were 22 kindergarten pupils from one school and 22 pupils matched according to age, sex, race, intelligence, left and right-handedness, hearing, vision, language maturity, and socioeconomic status.

The Edison Responsive Environment Instrument is a computerized typewriter that reproduces several human sensory responses. It was monitered by trained personnel. The subjects came to the instrument voluntarily for 30 minutes per day over a five month period. The total time per child amounted to about 22 to 36 hours. The instruments were housed in booths which provided isolation from distraction.

The control group was taught the conventional reading methods. Consequently, the results seemed to favor the E.R.E. group. Even the scores of slower children were superior to the more intelligent in the control group. There were no observed sex or racial differences.

The authors indicated the multi-sensory method of teaching, especially with very young children, will enable them to read at an earlier age and with greater speed. This is done on the assumption that learning to read well results from early sessions of successful experiences, followed by extensive reading.

Mattleman, M.S.," An Evaluation of the Effects of an Enrichment Program on Six Year Old Children," Temple University, Philadelphia, Pa., 1966. ED 012 369

Children in grade one living in culturally disadvantaged areas were provided with reading enrichment programs which were designed to develop language abilities.

Both control and experimental groups were used. Language arts skills such as listening, language enrichment, and basic reading skills were taught in a compensatory setting.

Miller, Wilma, "Home Prereading Experiences and First-Grade Reading Achievement," The Reading Teacher 22:641, April, 1969.

The author generalized that children from the lower socio-

economic classes usually have less opportunity to participate in home prereading experiences before attending the first grade. Most middle class white children have experiences related to success in reading before they attend school.

With this rationale in mind, the author conducted 55 home interviews of middle-class, upper-lower class, and lower-lower class mothers in two small mid-western towns to ascertain home pre-reading experiences.

Middle class home experiences included family trips and discussions of events, being read to, recognizing most of the alphabet letters, considerable contact with books, good auditory perception, and a good sense of left-to-right progression. Most lower-lower class children had little or no such experiences.

The author concluded that prereading experiences were found to be related to reading readiness in the first grade. The statistical analysis indicated that middle-class children were better prepared for beginning reading.

Packer, Athol B., "Ashton-Warner's Key Vocabulary for the Disadvantaged," The Reading Teacher, March, 1970.

According to the author any method used in beginning reading instruction will make little difference to children who have limited backgrounds of experiences and meager language skills, as they will produce ineffective readers.

The Ashton-Warner technique is quite different from the vocabulary introduced in the popular basal readers. This is known as the "key vocabulary." It is believed that the words the children learn should be life related and be meaningful to them, as meaningful material is easily learned and retained longer.

The nature of the project was used by the author of the Key Vocabulary with young children who came to a morning session for early reading. Each child told what word they wanted to learn that day. It was written down on a card and the children traced the letters as he said the word. Later the child wrote the word on a chalkboard. When the child developed an "organic" vocabulary of forty words, he would then write a story about something which interested him.

Four school systems were used in the initial research. They were located in Jonesboro, Arkansas, Jacksonville, Florida, Philadelphia, Pennsylvania, and Yakima, Washington. The follow-through model used in these schools was the University of Florida parent-education model, designed and directed by Dr. Ira Gordon. The four groups contained white, Negro, Indian, Puerto Rican, Italian descent, and white children from migrant worker's familites.

The basic data needed for the study were of two types. One was the key list and was obtained as a result of the teachers' using the language development method of asking the child what

word he wanted to learn. This list included such words as: mama, alligator, swing set, fire escape, banana pudding, hoss, dragon, rattlesnake, astronaut, ghost, knucklehead, leopard skin coat, go-go boots, and I love Charlie.

The second list of words used was taken from the words presented in the pre-primers and primers of the major basal reading series used in the four school systems. Ginn, Harper, Houghton-Mifflin, and Macmillan Publishing Companies were involved. The key vocabulary words were diveded into fourteen categories: 1. persons' names, 2. fear, 3. sex, 4. locomotion, 5. animals, 6. favorite characters or heroes, 7. food, 8. clothing, 9. furnishings and shelter, 10. color, 11. number, 12. structure words, 13. verbs, and 14. other common nouns.

The results seemed to indicate the key vocabularies coming from the children themselves had little or no relationship with words used in basal reader vocabulary. It may be easier for children to use their own words to express their thoughts in writing. The author also concludes that teachers of disadvantaged pupils, as well as advantaged pupils, should try the Ashton Warner method since it involves the child in using his own meaningful language experiences as the basis for skill development.

Potts, Alfred M., and others, "Providing Opportunities for Disadvantaged Children," State Department of Education, Denver, Colorado, 1964.

The term "disadvantaged" was used to represent environments that were not adequate to live a full life. A culturally disadvantaged child was described as one who was unable to conform to present group expectancies.

This workshop report was a result of one group's efforts to consider the problem of how the school could aid the child to achieve greater levels of competence. Some suggestions were given concerning how this responsibility could be met.

The curriculum should be centered around cultural aspects which would help the young to determine which might be best to perpetuate our democratic order and society. Society has a definite role to play in bringing about these competencies by making it possible for the young to attain them. The disadvantaged child needs to understand the pressures to conform, coming from the conflict between school, peers and the community. The disadvantaged child must have the opportunity to learn to enjoy life. Through curriculum adaptations, cultural competence can be achieved for the disadvantaged child.

In order to adapt an effective curriculum, we need to understand the child more fully and be aware of the areas in our culture which call for competence, such as classroom climate in early education, and language teaching, the authors concluded. Methods of teaching and special lessons for these areas were suggested.

Smith, Carl B., and others, "Reading Problems and the Environment," Indiana University, Bloomington, Indiana, 1969.

The author attempted to assimilate information on community influences and other environmental factors in order to set up enrichment programs for children living in disadvantaged environments.

Programs were set up so that parents could participate, as well as other adults, in the community program. Preschool programs, as well as classes in the ungraded elementary schools, were initiated.

Concentration was in the area of reading difficulty. Programed tutoring was used to help the culturally disadvantaged with reading problems.

"Proposals for Implementing the Report of the Committee on Human Relations and the Culturally Disadvantaged," Springfield Public Schools, Springfield, Mass., 1964.

The "culturally disadvantaged" child may come from a home representing any location on the socioeconomic scale, with parents of any occupation. This type of child is required to be enrolled in school; he is potentially capable of completing the school program, but because of home and community environment, is unable to do so without special, individualized help above and beyond that normally given in the regular curriculum.

Proposals for programs for culturally disadvantaged children in this school system are presented in outline form. They include: inservice teacher education; a bureau of pupil services with a psychiatrist, a psychological examiner and a school adjustment counselor; special teachers and auxiliary personnel, reading services; library additions, summer programs; parent information and adult education related to the special program; a priority list for specific proposals for curriculum improvement; art programs; home economics education; music education; health; physical education; and cultural contacts for the elementary school students.

Rockwell, Robert E., and Gordon F. Liddle, "Modifying the School Experience of Culturally Handicapped Children in the Primary Grades," Quincy Youth Development Commission, Quincy, Illinois, 1964.

This study was designed to provide a richer background of intellectually stimulating experiences for the culturally deprived child through a better use of community resources and school

facilities and materials. The second facet of the program concerned working with parents. Consultation and enrichment were given in art, music, reading, and emotional problems.

Various field trips were organized with pre-and post-relevant experiences. Also, inservice workshops dealt with problems of the culturally deprived.

Parents were encouraged to take part in the education of their children. The responsibilities of the workers dealing with families included: conducting a follow-up interview after the school year had begun, acting as a liaison between the teacher and the family, observing the classroom and home for special needs and problems, and organizing parent groups for discussion of problems.

A unique feature of the program was the use of college students as teacher-helpers. Also, various community groups made special contributions to the program. The Fine Arts Society, the public library, the local health department, church groups, and welfare agencies were among those who aided in the program.

School and Home Focus on Achievement -- A Plan to Raise the Achievement level of Underachieving Elementary Children, Flint Public Schools, Flint, Michigan. 1963.

The purpose of this project was to raise the achievement level of underachieving students. Parents and teachers worked together to improve children's attitudes towards school. Objectives were to awaken interest in parents, help teachers discover under-lying causes of underachievement and to up date the materials being used.

Included were detailed descriptions of teachers' and parents' plans, as well as home study assignments for the children. Also described were the "read-aloud" program, and the "reading incentives programs," dictionaries and other new materials being used by the teachers for these reading programs.

The results seemed to indicate an increased interest on the part of the cooperating teachers, as well as the parents. In addition, the students made higher achievement scores on the tests administered.

Spencer, Doris J., and Doris I. McQuin, "Individualized Reading Versus a Basal Reader Program at First Grade Level, in Rural Communities," Johnson State College, Vermont, 1965.

This study compared the effectiveness of a standard basal reading program with an individualized reading program in the

rural area in Vermont.

Twelve combination first and second grade individualized reading classes were paired with twelve basal reading classes. Both were pre-tested and post-tested. Testing was done in the areas of phonetic skills, word recognition, spelling, comprehension skills, and a program of story reading.

The results indicated that an individualized reading program at first grade level is desirable.

Whalen, Thomas E., "A Comparison of Language Factors in Primary Readers," The 1969-1970 Reading Program, California State Department of Education.

Two reading text series, The Harper and Row Basic Reading Program and the Macmillan Company's Bank Street Basal Reading Series were chosen for use by culturally disadvantaged youngsters. These texts were chosen presumably, to meet the specific needs of the culturally disadvantaged.

Culturally disadvantaged children were described as "pupils whose scores on the most recent reading test do not come up to the expectancy level determined by teacher judgment of performance in the classroom and/or other test scores available and who, in the opinion of the teacher, have such low reading achievement because of economic, cultural, social, or language backgrounds, and resultant language disabilities, or other disabilities..."

No matter how group assignments are made for beginning readers, one would expect the reading textbooks used by pupils in the advantaged group to be designed to overcome the language difficulties which are apparent in these children. Also, one would expect that "pacing" would be slower and more repetitive with more "regular" words being introduced. This investigation sought information about these expectations, and to support or deny preliminary hypothesis that the reading texts assigned to disadvantaged youngsters were more difficult, not easier.

The method of evaluation was to compile from a lexicon prepared by the Southwest Regional Laboratory for Educational Research (SWRL) of irregular words. All one and two-syllable words were categorized according to the specific spelling-sound correspondence rules. The rules were arranged in hierarchial order of productivity (frequence of occurence.) The dictionary of irregular words for this study was composed of approximately 500 irregular words for beginning readers. For example, the list included such words as busy, chocolate, clothes, debt, do, deer, enough, garage, ghost, hour, and so on.

The four books from each of the two series were selected for comparison. The first Bank Street pre-primer, <u>In the City</u>, was compared with Harper's <u>Janet and Mark</u>. The Bank Street pre-primer, <u>People Read</u>, was compared with <u>Outdoors and In</u>. <u>Around the Corner and Uptown</u>, <u>Downtown</u> was compared with <u>Real and Make-Believe</u>.

The traditional way of measuring texts for difficulty level is to apply an appropriate readability formula to determine grade level assignment. Several formulas were consulted to determine this. They were Dolch, Washburne and Morphett, Wheeler and Wheeler, and Spache. These formulas were useful, but their applicability to this study was limited. Generally a word is judged difficult if its usage is less frequent for a given age group than another word. There is no differentiation among words of linguistic difficulty. Consequently, the following variables were chosen: 1. number of irregular words, 2. number of different words, 3. average sentence length, and 4. average word length.

The conclusions seemed to indicate that culturally disadvantaged children who have language disabilities would find the Bank Street series rather difficult to read.

Summary

Relatively little information, in the area of reading, has been gathered from rural areas despite the fact that two-thirds of the nation's poor are rural white people. A resume' is listed below.

1. Some of the authors who initiated and reported their descriptive research seemed to agree that disadvantaged rural white children expressed reluctant or defeatist attitudes.

2. There is some evidence that these children respond positively to a well structured, individualized approach to reading instruction.

3. Several authors reported that cognitive development and verbal expression must be connected for more precise learning to occur.

4. The socio-economic level of the family seems to be a direct factor which facilitates language development. Middle-class children seemed to be "ready" to read earlier due to the many factors which contribute to adequate language development such as a wide variety of experiences, earlier exposure to books, and so on.

5. Some reported that ungraded programs seem to meet the needs of disadvantaged children. Fluid grouping systems, strong readiness programs, and junior primaries seem to be meeting the flexible needs of disadvantaged children.

6. Heavy emphasis was placed on a one-to-one or small group tutoring approach to remediation. Also, enrichment programs such as extensive field trips and library experiences were quite important.

7. One author suggested the preschool disadvantaged child may be helped most in language development by enlarging his repertoire rather than trying to correct his nonstandard form.

8. Vocabulary and language concepts develop slowly, so the culturally deprived have difficulty mastering communication skills. This is frustrating for these children. Consequently, success, no matter how small, must be emphasized. Also, a positive teacher attitude is imperative.

One must remember that school programs can never full

compensate for deficiencies in background and experience. But, such reading programs can do a great deal in overcoming a poor start and preventing children from falling hopelessly behind in their education. In order to successfully teach these children to read, it seems logical to assume that we must meet their specific needs, and do so on an individual basis. Consequently, this researcher has included information concerning setting up a Reading Center and Child Study Clinic.[6] This information is found in Appendix III.

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[6] Sutts, Warren G., A Model Program for Remedial Reading, U.S. Department of Health, Education and Welfare, Office of Education, Washington, D.C., 1965.

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APPENDIX III

Reading Center and Child Study Clinic

One specific way the poor white, rural disadvantaged child can be helped is by setting up corrective and remedial reading programs which are specifically structured to meet their particular needs. This can be done quite adequately in a local reading center. This reading clinic must be within reach of the nation's poor so that early diagnosis and analysis of the causative factors in reading can begin immediately.

The Reading Center and Child Study Clinic can also be used to provide experiences for teachers working with lower-class children as well as to encourage the use of local facilities for research and experimentation. In addition, it would be used, as in the case of Franklin College, in preparing future teachers at the undergraduate level.

Development of an adequate remedial reading and study clinic depends on suitable facilities and personnel. Cutts says "The size of the clinic staff would depend upon the number of children needing remedial instruction. Preferably, the clinic would serve a cluster of schools within the community." This clinic would provide specialized services such as diagnosis and remediation of reading difficulties.

Ideally, the personnel for the clinic would include: 1. a director, 2. a full time psychologist, 3. two instructor-clinicians, and 4. adequate secretarial help.

Clinical teaching would be determined by the instructional needs of the referrals. The children may spend anywhere from six weeks to two years in the clinic setting. Some referrals require individual instruction, while others can profit by small group instruction. The minimum instructional period would be 30

Cutts, Warren C., A Model Program for Remedial Reading, U.S. Office of Education, Washington, D.C., 1965.

minutes daily; but flexibility would be employed at all times.

The facilities of the Reading Center and Child Study Clinic should be equipped with large quantities of reading materials on every instructional level and in many areas of interest. This library and materials laboratory would be located in a central place.

The clinic should have one 16mm sound projector and one film strip projector, plus two tape recorders. In addition, a Keystone Tachistoscope, a controlled reader, a Tach X projector, a Language Master recorder, and a shadowscope.

In addition, reading games and other motivational consumable supplies should be a basic part of the equipment. Obviously, such supplies as tag board, flannel board, magic markers, paper cutter, construction paper, and other instructional visual aids should be available.

The Reading Center and Child Study Clinic should be designed for clinic and intern use. The area must be flexible to meet a variety of needs; thus it must contain movable furniture.

Ideally, there should be one room of about 750 square feet. This room would accommodate about 25 college students for classroom instruction, research, small group conferences, and discussions. At least one instructional area of at least 20 by 20 feet should be equipped with additional individual tables.

GRANT NUMBER XIII

PROPOSAL TO COORDINATE STUDENT ACADEMIC DEVELOPMENT ACCOUNTING AND GRADUATION CHECK ACCOUNTING AT KNOX COLLEGE, MARCH, 1969

William C. Ripperger
Director of the Computer Center

A Coordinated Approach to Student Academic Development Accounting and Graduation Check Accounting at Knox College

Currently, academic advisers of Knox students are appraised of students' progress towards graduation through copies of the students' Permanent Records and copies of students' Development Records. Xerox copies of the former showing past work and work in progress are provided every term. Up-dated copies of the Development Record are supplied by the Registrar's Office once each year, and the adviser is responsible for the interim up-dating.

Graduation requirement checks, on the other hand, are made by the Registrar's Office only during the summer before the students' senior year. Before returning in the fall each senior and his adviser are appraised of the graduation requirements remaining to be completed in the senior year.

The copying of the students' Permanent Records, the up-dating of the Development Records, and the checking of graduation requirements are all long hand operations. The creation of the students' Permanent Records, however, is a card oriented computer operation. The proposal here is to convert this card operation to a disc operation capable of supplying to the adviser and student each term (1) a statement of the work taken by students, classified by area of study, and (2) a statement of the students' graduation requirements which have not as yet been fulfilled.

Not only will this change convert a long hand operation to a more efficient machine operation, remaining requirements will be in a researchable form--classifiable by class standing and related to course demands. Furthermore the tediousness of faculty advising will be avoided, thereby leaving more free time for the development of adviser-student personal relationships.

To accomplish this goal extensive clerical help will be required of the Office of Institutional Research to provide data on transfer credit--currently not in card form. Secondly, extensive computer programming will be required from the Office of the Director of the Computer Center. The college has agreed to supply the necessary clerical help and the direction for this programming. A $500 USOE seed grant is requested to pay for assistance in programming.

The basic programs developed under this proposal will be made available to USOE and to other colleges upon request. A number of other colleges have already indicated a desire to have these programs when they are developed.

William C. Ripperger
Director of the Computer Center

GRANT NUMBER XIII

SEED GRANT REPORT

COORDINATION OF ACADEMIC DEVELOPMENT RECORDS WITH GRADUATION CHECK ACCOUNTING

Report by George L. Melville

Programming:

William C. Ripperger
Terry Keeling

769

This project was supported by a seed grant off-setting a part of the extensive computer programming costs necessary to develop the output. The purpose of the output is to supply to the student and to his adviser a statement of (1) the student's entering profile information, (2) the student's college record to date, (3) an analysis of the student's record relative to the college's graduation requirements, and (4) the student's remaining requirements to be completed for the degree. This permits the time between adviser and student to be spent on a personal basis with considerations as to the student's individual development. This output is achieved each term with the information from the preceding and current term updated. Both students and faculty have been delighted with the output since in the past all too frequently advising was a matter of checking to see if the student was meeting the various requirements.

This program has been of great benefit to the Office of the Registrar and to the Office of Institutional Research. The basic information is disc stored, and the heading information for such things as grade reports can be retrieved from the disc, thus eliminating extensive collation of cards. The student's Academic Development Record is updated by computer each term whereas this formerly was an extensive long-hand operation. Finally, having the students' records of disc provides a data bank formerly not available.

The output of this program is the best thing of its kind in the country. It is the type of thing people dream about having but rarely achieve. It cannot be accomplished without great effort or without having had a period of disciplined card filing in data processing. Grade changes, for example, must be carried through to changes in the card files and not simply ended with a change in the student's cumulative data and permanent record.

To achieve this program an extensive clerical effort is necessary to put the academic work transferred from other institutions on unit record cards. This had not been done in the past, such information being merely typed on the student's permanent record. A fringe benefit of the new program is that data processing can now supply such data on labels for the permanent record.

KNOX COLLEGE
EDUCATIONAL DEVELOPMENT RECORD
5/11/70

ADVISER
MR CARL EISEMANN

DATE ENTERED
1 66

NAME

DATE AND PLACE OF BIRTH
NOVEMBER 3 1949
CHICAGO ILLINOIS

CEEB		ACHIEVEMENT TEST SCORES		
VERB	MATH	MATH I	MATH II	FOR LANG
412	464			

NAME AND ADDRESS OF HIGH SCHOOL
MORGAN PARK HIGH SCHOOL
CHICAGO ILL

HIGH SCHOOL
CLASS RANK 1/10 1/4
25/ 448 1 1

HIGH SCHOOL UNITS

ENG	FR	GER	LAT	RUSS	SP	AM HIST	OTHER HIST	ALG PLGM	TRIG SOGM	CIVICS SOC ST	ECON	POL SCI	BIO	CHEM	PHYS
4.0	2.0	0.0	0.0	0.0	0.0	1.0	2.0	3.5	0.5	0.0	0.0	0.0	1.0	0.0	1.0

2ND TERM 1967-68

ENG	101 -5	FRESHMAN ENG	1.0	C
HIST	105 -3	WEST CIV	1.0	B-
SOC	201	INTRO TO SOC	1.0	B
PEW	-B	BADMINTON	.0	C

3RD TERM 1967-68

HIST	106 -3	WEST CIV	1.0	B-
PS	201	AM NATL GOVN	1.0	B-
PSY	111	INTRO PSYCH	1.0	B
PEW	-R	TENNIS	.0	C+

1ST TERM 1968-69

BIOL	121	CELL BIOLOGY	.0	F
EDUC	200	CH DEV LEARN	1.0	B
FR	102	ELEM FRENCH	1.0	C
PEW	-O	TENNIS	.0	B-

2ND TERM 1968-69

BIOL	122	BIO DIVERSITY	1.0	C
ECON	201	PRINCIPLES I	1.0	C+
FR	103	ELEM FRENCH	1.0	C

3RD TERM 1968-69

ART	103	FORM AND EXP	1.0	C
EDUC	309	LG ART EL SCH	1.0	A-
EDUC	317	PE IN ELE SCH	.5	A
ENG	223 -2	INTRO TO DRAMA	1.0	B+
PEW	-L	GOLF MIXED	.0	S

CHICAGO CITY COLLEGE
SUM 1969

BIOL	121	CELL BIOLOGY	1.2	
CS	101	INTR COMPUTING	.9	
SPCH	101	PUBLIC SPEAKING	.9	

1ST TERM 1969-70

ART	200	DRAW & PAINT	1.0	S
EDUC	312	SCI EL SCH	.5	B
ENG	241	MAST LIT I	1.0	A-
HIST	104 -4	WEST CIV	1.0	B

2ND TERM 1969-70

EDUC	310	SOC ST EL SCH	.5	A-
EDUC	311	ARITH EL SCH	.5	B
EDUC	313	ART IN EL SCH	.5	A-
MATH	151 -1	CALCULUS I	.0	U

3RD TERM 1969-70

EDUC	357	IMP EL ED	.5	*
FR	201 -2	INTER FRENCH	1.0	*
MATH	123	FINITE MATH	1.0	*
MUS	106	INT TO MUS	1.0	*

REMAINING REQUIREMENTS
5/11/70

ADVISER
MR CARL EISEMANN

NAME

12.5 TOTAL CREDITS NEEDED, PLUS COMPREHENSIVE EXAM

2.95 UPPERCLASS GRADE INDEX

300 LEVEL COURSES

EDUC 309	LG ART EL SCH	1.0	A-
EDUC 317	PE IN ELE SCH	.5	A
EDUC 312	SCI EL SCH	.5	B
EDUC 310	SOC ST EL SCH	.5	A-
EDUC 311	ARITH EL SCH	.5	B
EDUC 313	ART IN EL SCH	.5	A-

3.0 MORE 300 (OR ABOVE) LEVEL COURSE(S) NEEDED

MATH PROFICIENCY - COMPLETE

LANGUAGE PROFICIENCY - COMPLETE

SOPHOMORE COMPETENCY
ONE COURSE IN MATH ABOVE 150 OR A FOREIGN LANGUAGE ABOVE 200 NEEDED

DISTRIBUTION REQUIREMENTS

HUMANITIES - COMPLETE

HIST 105 -3	WEST CIV	1.0	B-
HIST 106 -3	WEST CIV	1.0	B-
ART 103	FORM AND EXP	1.0	C
ENG 223 -2	INTRO TO DRAMA	1.0	B+

MATH-SCIENCE - COMPLETE

BIOL 122	BIO DIVERSITY	1.0	C
BIOL 121	CELL BIOLOGY	1.2	
CS 101	INTR COMPUTING	.9	

SOCIAL STUDIES - COMPLETE

SOC 201	INTRO TO SOC	1.0	B
PS 201	AM NATL GOVN	1.0	B-
PSY 111	INTRO PSYCH	1.0	B

COURSES TAKEN IN MAJOR AREA - EDUCATION

EDUC 200	CH DEV LEARN	1.0	B
EDUC 309	LG ART EL SCH	1.0	A-
EDUC 317	PE IN ELE SCH	.5	A
EDUC 312	SCI EL SCH	.5	B
EDUC 310	SOC ST EL SCH	.5	A-
EDUC 311	ARITH EL SCH	.5	B

3.50 AVERAGE IN MAJOR AREA

GRANT NUMBER XIV

SEED GRANT REQUEST

A PROPOSAL FOR A FARM TERM IN THE SATELLITE CURRICULUM

Submitted by

Duane Moore
&
Douglas Wilson

Knox College
April, 1970

773

KNOX COLLEGE
GALESBURG, ILLINOIS 61401

Department of English

April 15, 1970

Prof. George Melville
Knox College
Galesburg, Illinois

Dear Prof. Melville:

We are writing to request support for the planning of an experimental program. As you know, the new curricular framework known as the satellite curriculum makes possible the authorization of programs of study for credit that can not be accomodated in the regular curriculum. We are in the process of planning a term-long, full-time learning experience which would involve living, working, and studying in the country with a group of students.

Our educational concerns are roughly these: that our students, with predominantly urban backgrounds, are almost totally out of touch with the country, both the natural and domesticated landscape; that this situation is serious in that it entails an ignorance that contributes directly to the much-publicized environmental crisis; that living in the country presents a rare opportunity for urban-oriented students to develop a knowledge of and sensitivity toward living and growing things, toward the earth which sustains us. From this perspective, we have conceived the possibility of taking a group of students to live for a term on a farm in an area that features, not only good farm ground, but also woods, streams, and a varied landscape. Southwestern Wisconsin is the specific area we have in mind.

During this term we propose to organize a work-study program with a double focus. The first would be the natural environment--foliage, animal life, soil, water, etc. The second would be not only farming operations but the whole rural way of life. Our program would consist largely of field work, but we would also devise a substantial reading program in appropriate areas. Our hope is to inspire and facilitate a movement in the direction of environmental awareness, and, along with it, a style of learning that emphasizes curiosity about the world at hand and encourages individual initiative in the exploration of that world.

To plan this project requires a great deal of travelling. As our plan calls for cutting loose from the college's residential arrangements, we have to look out for and look into such things as housing, food, health services, sanitation, insurance, transportation, tools, etc. We also need to contact and arrange for the cooperation of such officials as the County Agricultural Extension Agent, the Soil Conservationist, etc. The expenditure of time is very considerable and the cost of travel not insignificant. The grant that we are requesting from you, in the amount of $500, would go far to defray these expenses and help us immeasureably in completing the planning of this program.

Respectfully,

Duane Moore, Geology

Douglas Wilson, English

DW,DM:pa

GRANT NUMBER XIV

FINAL REPORT

A PROPOSAL FOR A FARM TERM IN THE SATELLITE CURRICULUM

Duane Moore

Douglas Wilson

776

A PROPOSAL FOR A FARM TERM IN THE SATELLITE CURRICULUM

Submitted by

Duane Moore (Geology) and Douglas Wilson (English)

I

Ours is an urbanized society. Our predominant mode of life is shaped by the cities we inhabit and the conditions they impose upon us. Our agrarian past has been shed so rapidly that little apparent trace of it remains. Even in the Middle West, which may be the richest agricultural region in the world, people in the cities have virtually no sense of the land and the rural life around them. Soil is something dirty that gets under your fingernails. Food comes from factories. The people of an urban society have, in short, lost touch with the country.

We believe that all of this has more important consequences than the comic spectacle of an urban adult seeing his first cow. We believe, in fact, that the loss of feeling for living and growing things, for the earth that sustains us, contributes directly to the systematic destruction of our environment that is proceeding at such a terrifying

pace. And we further believe that in our own time--that of ourselves and of our students--we shall have to cope with an ecological crisis of deadly proportions.

We propose, in the light of all this, to curricularize our concern by organizing a program in the satellite curriculum to be spent living, working, and studying in the country with a group of 15 students. Some of the most important educational objectives would be these: to have the experience of living on a farm; to study and work with the soil and come to some understanding of its origin and character; to develop a sensitivity to the earth and a sense for man's relationship to it; to examine the consequences of treating nature as a commodity; to make contact with the people of the rural community and attempt to understand their situation and outlook; to become familiar with the work of the farmer; to study the agrarian tradition in American history; to consider the history and the significance of the government's relation to agriculture and to the farmer; to consider the application of technology to agriculture and its consequences.

The program that we have in mind would be strongly oriented towards field work. The students would spend a sizeable portion of their time doing basic farm work, observing other agricultural and produce operations, meeting with local officials and other resource people, and exploring the natural environment. But there would also be a

substantial program of reading and discussion, as well as research projects that would result in papers. This would, we think, create a learning situation which is very rare on the campus, and that is to have all of the student's activities, and those of his fellow students, very closely related. Our program would be a very intensive and demanding one, and all prospective members would be so warned.

II

One of the principal assumptions on which this proposed program is based is that living in the country and on a farm can be, especially for students raised in an urban environment, a valuable learning experience in itself. For one thing, such a student's knowledge of the countryside is usually pieced together--from books, from visits to lakes and seashores, from traveling vacations, from hunting and fishing trips, from fleeting glimpses of one kind or another. These brief encounters, in addition to creating a patchwork picture, tend to re-enforce rather than test the urban biases which inform his way of thinking about the natural landscape. Living in the country presents an opportunity to see it steadily and see it whole.

For a second thing, life in the country is qualitatively different from urban life. It is not simply that there is less noise and that the air is cleaner and that there are fewer people to be encountered, though these are dramatic

differences of real consequence. Neither is it simply that life in the country presents opportunities for daily and intimate contact with the out-of-doors, with plant and animal life, with the elements and natural processes, though these are equally dramatic and of equal consequence. It is rather, we think, that being in these circumstances has an impact upon the consciousness and imagination that is simply not to be had in any vicarious way.

These two basic considerations might be expressed as a concern for knowledge and a concern for feeling. While the crucial importance of both in education is usually acknowledged, academic work in the classroom often emphasizes one at the expense of the other. Perhaps here more importantly than anywhere else, the proposed Farm Term attempts to serve the basic educational goals of the College, for to bring knowledge and feeling together is the aim and the essence of liberal education.

III

The location that we have chosen for the Farm Term is southwestern Wisconsin. It has several advantages. A predominantly rural area (no large cities, no substantial industry), it features a varied and strikingly beautiful landscape. It belongs to the "driftless area," which means that it lies in that small and unique portion of the northern plains that was not touched by glaciers. As a result, the

land is characterized by a system of ridges and valleys, being heavily wooded in the steep and rough places, and drained by numerous streams. It is bordered by the Mississippi River.

We would procure a farm that contained the interesting physical features indicated above, as well as suitable farm ground and buildings. The house would serve as dormitory and dining hall. Individual space for work and study could be found in the barn and other buildings. The cooking and general housekeeping would mainly be done by the members of the program.

We propose to establish our program on such a farm for the Spring Term 1971. After getting settled, the group would spend a period of time becoming acquainted with the farm itself, the immediate neighborhood, and the surrounding countryside. Geological and historical background would be provided by the instructors and other resource people in the area, such as the State Historical Agent and National Park Service personnel.

The second stage would be to set up on-going projects on the farm itself, either on a group or individual basis. Selected and carried on by the students themselves, these projects would relate to the study of the natural environment (foliage, wild life, soil, water), to the barnyard (e.g., working with farm animals), or to other appropriate topics such as conservation. These would be projects that

would be pursued on a day-to-day basis over and above the other activities of the program.

Once these were worked out and set in motion, we would arrange meetings with local officials such as the Country Agricultural Extension Agent, the Soil Conservationist, the County Forester. We would also look into such farm-oriented operations as the Electrical and Telephone Co-operatives and such organizations as the Farmer's Union, the Farm Bureau, and the N.F.O.

As soon as possible, we would begin to arrange for members of the program to observe and participate in basic farming operations on working farms. Spring work centers around preparation of the ground and planting, but attention would also be given to year-round operations like milking or beef, sheep, and hog production. By the end of the term there would also be some opportunities to get involved in haying. Lest there be any doubt on this point, we should say that we intend to involve the members of the program as fully as possible in these operations--from driving tractors, to bucking hay bales, to slopping hogs. This is not to be a passive proposition.

There will be some things in town that we would want to look into also, such as various produce operations--cheesemaking, Grade A dairying, butchering. Throughout the course of the program we would make special efforts to meet not only the neighboring farmers, but other members of the

surrounding community--the merchants, the ministers, and other townspeople.

The other principal focus of the Farm Term--the natural environment--would receive regular attention but would come in for more emphasis in the second half of the program. By this time the vegatation will be burgeoned and the weather warmed, and we would want to be spending most of our time out-of-doors. Initially, we would be concerned with such questions as: What grows here? What grasses, weeds, flowers, shrubs, trees? What animals live in the fields, in the woods, in the streams? What is the makeup of the different soils? How do they come to be where they are? How are they related? Basic observation should prepare the way for an approach to more complex problems involving food chains, ecosystems, consideration of the ways in which the varying forms of life are interrelated. This would lead to, among other things, a consideration of how the domestication of the environment affects the natural processes and what consequences result.

As in all other aspects of the program, we expect here to be taught by books and knowledgeable authorities as well as by observations, but more importantly we expect to teach each other and to teach ourselves. Teaching and self-teaching are important aspects of the kind of learning experience we are after.

Readings in assigned and independently selected topics

would be a regular part of the weekly work, as would discussion sessions on the topics. Each student would present at least one report and produce a substantial paper. Journal-keeping and picture-taking would be strongly encouraged and in some cases might constitute part of the students' required work.

One of the most important aspects of the program, as we envision it, is to develop a style of learning. Such a style would emphasize such things as these: a seriousness and an openness towards the world at hand, the world under foot; a curiosity about the commonplace and what is taken for granted; the need to be informed about the natural landscape as a citizen and as a human being; interrelating the theoretical and the practical, the work of the mind and work of the hands. We seek, in short, a style that is sufficiently natural and functional as to become part of one's way of being in the world.

IV

The Farm Term would be organized and directed by the faculty sponsors jointly. We would be responsible for all decisions affecting the makeup and operation of the program, though many of these decisions would be arrived at through consultation with the student members. After an appropriate public announcement and explanation of what we have in mind, we propose to hold a meeting for all interested students to

explain the program further and make sure that potential applicants know what they might be getting into. Applications would then be invited. We would ask the applicants to tell us about their backgrounds and interests and to say why they want to participate. A careful study of the applications would be followed by personal interviews, after which the final selection would be made. The basic criterion for selection would be this consideration: which of the applicants, in the judgment of the directors, are best able to contribute significantly to the program and to benefit educationally from it.

We think it is important to make clear in this proposal, and will be equally important to make clear to interested students, the following things: 1) that this program is a serious educational venture, not a lark in the country: 2) that, while our plan calls for living as well as working together, the program is not primarily an experiment in group living and social interaction; 3) that the program is to be a fairly strenuous one and entails for each individual member a great deal of hard work, much of it physical and not a little of it menial; 4) that most of the student's waking hours will not be his own but will be taken up by the scheduled work of the program; 5) that it will be essential for all members of the program to show proper respect for the customs, values, and sense of propriety that prevail in the local community.

V

Finally, we think the program here proposed would be, for all concerned, immensely enjoyable. The change of pace from academic routine, the novelty of rural life, the inevitable springtime thrust toward the out-of-doors, all come readily to mind as obvious advantages, for people in a college community, of spending the Spring in the country. Our intention is to carry on this program in such a way as to bring out and enhance in every possible way the conspicuous pleasures of country life: horses, hiking, mushrooms, meadows, woods and wildflowers, fish, birds, swimming, watercress...For these all contribute to the basic educational theme: coming to know, through a personal, practical experience, the varied and fertile crust of the living earth.

Budget for Proposed Farm Term

Housing

Rent for Base Farm	$ 300	
Rent for Moore house	150	
Rent for Wilson house	100	
Furnishings for Base Farm Bunks, desks, chairs, kitchen supplies to be borrowed from college warehouse or bought at auction sales and second hand stores.	300	
College truck - two round trips @ 20¢ / mile x 200 miles	160	
		1010

Transportation

Members cars @ .06/mile 100 miles/car/week x 4 cars x 10 weeks = 4000 miles	240	
		240

Food

We plan to economize here by buying wholesale at local cheese factories, fish markets, locker plants, etc. We will probably keep some laying hens. We want to make thorough use of the abundant wild foods in the area. We will almost certainly have a milk cow.

Rent for milk cow	60	
Used pasteurizer	20	
Feed for cow and chickens	50	
Seeds for garden	10	
Second hand tools	20	
Cow to be butchered: 1200 lbs @ .25/lb	300	
Processing and locker rental	100	
Other food $9.00/week/student x 10 weeks x 15 students	1350	
		1910

Instructional Costs

The instructors will have completed all (Moore) or all but one (Wilson) of their normal course load during the Fall and Winter terms. An adjustment is therefore indicated for instructional costs. Fifty per cent seems reasonable. Figures reflect (approximately) total compensation.

Moore: 14,500/3 = 4833
Wilson: 14,500/3 = 4833

9666/2 4833

Contingency Fund

Health services, stationery, postage, materials, tools, telephone, utilities, planning and unforeseen costs. 500

Speakers Fund

To pay a modest honorarium and expenses to various resource people and consultants. 500

Summary of Costs

Housing	1010
Transportation	240
Food	1910
Instructional costs	4833
Contingency	500
Speakers' Fund	500

Total Program Cost 8993

Income to the college from 15 students is $18,855 for the Spring term. This program will need 47% of this income, leaving 53% of the total fees for that term to be used for administration and maintenance of the campus proper.

GRANT NUMBER XV

SEED GRANT REQUEST

Development and Evaluation of a Special Admission Program for Disadvantaged Students.

Submitted by
Ronald Montgomery, Assistant Professor of Sociology
Franklin College
Franklin, Indiana

The purpose of this seed grant is to provide the ground work for the development of the culturally disadvantaged program. In particular the seed grant will provide funds for the development of evaluation instruments, for the study of programs developed by other colleges, and for development of methods of identifying and recruiting students who would benefit by this program.

The study of the related literature will be undertaken as part of this project. However, since many of these programs are new, visits to some of these will be needed. In order to minimize initial cost, the visits will be nearby Indiana colleges and to one Ohio college.

The development of evaluation procedures will be undertaken by developing guidelines for instructors and tutors. While the general method of evaluation has been suggested in the project outline, the need for guidelines for the persons doing the evaluation is obvious. The need for unobtrusive measures, while not obvious, would seem desireable, since the group of students will suffer a certain amount of "Hawthorne effect" from mere enrollment in the program.

The third part of the seed grant proposal concerns the development of both critieria for selection of students and development of methods of contacting these students. The first part would be accomplished by researching our present records for the experience of students who have been in the culturally disadvantaged group who attended Franklin College in the past. The second part would be accomplished by writing and contacting school guidance directors, and high school principals.

It is, of course, hoped that this grant will lead to a larger proposal. The author sees this as being two proposals. One would be for the development of a program that would be generalizable at other colleges and the second proposal would be for the support of students here during the program.

Nature of the Problem: At present Franklin College admits a limited number of marginal or risk students, and a very few who could be classified as culturally disadvantaged students. Neither group of students, at this time are admitted with any formal program to help them adjust to college. Therefore a special educational program is being attempted. Although both groups should be considered for a special educational program, this program is directed toward the culturally disadvantaged graduating high school students.

It has been found that only two percent of the culturally disadvantaged youth go to college, and this group of youth are predominately found in the city. Of this two percent, a lesser percentage actually finish college. An estimated eighty percent of the students that are involved in programs as The Special Admissions Program do go on to college or a university. In order to modify this condition, programs such as this are needed to provide direction and assistance to these youth who possess talent and ability to successfully complete a college program.

In considering such a program, it must be recognized that not only are the students in this target audience culturally disadvantaged they are also assumed to be underachievers. The causes that contribute to their underachievement are numerous; and at this time it has been difficult to isolate many reliable factors that should be considered first in priority to attack. One thing that has possibly been over rated as a causative factor of underachieving in this group is low level of motivation. In this program, it is assumed that the students' motivation for a college education is very high but their level of aspiration is low. Of the apparent factors that contribute to this group's underachievement, this program will deal with: 1) lack of financial ability which prevents the individual student and his family from viewing higher education as a possibility, 2) failure to use the real and proven, yet unfulfilled ability to achieve scholastically, 3) inability of the student to see the value of higher education, and 4) lack of guidance toward a higher education for the student with the ability and willingness to use this ability.

Program Goals: The general goals of the program are to identify those students who will benefit from this type of program, and these students will be helped to successfully complete their college career. The more immediate objectives are related to the attack on those problems that have already been identified above. They are as follows:

1) this program will make possible, economically, for the students who participate in the Special Admissions Program
2) this program will provide to the students the instruction and personal attention necessary to develop unused ability
3) this program will provide to the student professional guidance and counseling, together with personal guidance of college staff and students.
4) the student will be made aware of career opportunities which are within his reach with a college education
5) the student will be able to implement his experience in the program in his further educational career on the college level

Project activities: The Special Admissions Program for Disadvantaged Youth is a compensatory educational program based on the Upward-Bound program. It consists of an in-residence summer program and an academic-year-in residence program of tutoring for the individual student along with a modified or reduced hour load.

The portion of the program planned for August 17, 1970 through September 11, 1970 will be held immediately prior to the beginning of the academic school-year, in order to obtain maximum transfer of the educational advantage from the work the students will perform. The program will be four weeks duration. This program during the summer will consist of three non-credit and two courses with credit. It will be group oriented to provide support for the student in the academic atmosphere. The remedial aspects of the summer portion will be a non-academic Developmental Reading course to increase the student's reading speed and comprehension. The class size will be 10 students. The second non-credit remedial course will be Developmental Writing. This class will focus on correcting grammatical errors and expression difficulties. It will also aim at helping students construct coherent paragraph. The third non-credit remedial course will be a College Orientation course. The focus of this course will be upon study techniques, exam writing, and the use of the library. Part of the function of this course will be to provide supervised study time in which the student has an opportunity to develop study skills.

The two courses with credits will be a liberal studies course in the social sciences in which the student may earn four credit-hours and a physical education course with one hour credit. The social science course will contain material of high interest value for the students in this program. It is aimed at utilizing the assumed high level of motivation of the student to learn something of his society and himself in interaction with his environment. The reading will not be extensive, but the comprehension will be challenging. The physical education course is an institutional requirement of all students, as is the social science; and both will be used to help the student meet two course requirements while he is participating in this program. The physical educational course will also provide an outlet for physical exercise needs and an appropriate outlet for frustration that will come from the students involvement in this program. In addition to the needed course that will interest these students, they will also need to be assured of a person to whom they can turn for help, encouragement, and advice. Therefore a counseling program will be provided for this program. The counselor will be a trained counselor and may be a faculty member teaching in the program. During the summer program there will not be a one-to-one tutoring situation.

The fall portion of the program will consist of a two-pronged approach. Each student will have his own tutor with whom he can establish a significant degree of rapport. This tutoring situation is directed toward providing the individual student with instruction and personal attention so that he can begin to identify with educational objectives as he develops his scholastic abilities. The tutors will be regularly admit students who may or may not be education majors; but they will be students who are willing provide this service ~~for~~ free. The other half of the academic portion of the fall semester will be a reduced hour load made possible by the five credits earned during the summer session. The fall courses will be another required physical education course and another required social science course as well as an elective three hour course. There will be no attempt to set these students off or in any way call attention to them. Although it is recognized that their identity will be known by some of the other students. Although special efforts will be made to get them involved in campus activities, their group participation will not be encouraged.

Of course the director and the assistant will coordinate the activities and personnel of the program.

Target Population: The Special Admissions Program for Disadvantaged Students is directed toward helping those graduating high school students whose school preparation and achievement is inadequate for regular admission to institutions of higher education because of the factors of economic and cultural disadvantages. This program is not aimed at any one racial group as such. However, the resulting program population might be predominately non-white; but this will be due to the fact that most disadvantage youth are non-white.

Geographic Location: The Special Admission Program for Disadvantaged Students will generally be limited to Indiana students and specifically to the Greater Indianapolis area.

Innovative Features of the Project: The main innovative feature of the program is the combination of the two portions of the program, summer and fall sessions, with the one-to-one tutorial situation. Another innovative feature is that the student can earn college hour credits as he participates in the program. That is, while he is in the program he can earn a total of 12 hours which can be counted toward his accumulative credit hours and grade point average records.

Evaluation: At the end of the summer summer session, the project director and the staff will complete and submit a written evaluation. In a staff meeting any student who has received a questionable evaluation will be discussed by the staff to clarify any area which is questionable. From these evaluations, joint recommendations will be made to the office of the Project Director as to which students will benefit from his continuation in the fall semester. Those students who are judged to be able to benefit from his continuation in the program will be enrolled in the fall semester under the Special Admission program.

In the fall semester, feedback similar to the written evaluation will be continually be sought by the director and his staff to determine each student's progress in the program. Evaluations will come from the tutors, faculty, and counselor. At the end of the fall semester, a staff conference will be held to determine if any adjustments are necessary in the program to facilitate the group of students progress. The same procedure will be repeated in the spring semester.

The results of this first year program students will be matched against a similar group of students in school year 1970-71 and who will not have such a program.

Submitted by:

Ronald L. Montgomery, ACSW

Budget

Secretarial help (8 hrs per week for 10 weeks)	$120.00
Travel (visit 5 colleges)	90.00
Meals for travel	20.00
Student Help for researching development of evaluation forms (10 hrs per week for 10 weeks)	150.00
Printing of evaluation forms	50.00
Postage and miscellaneous	20.00
	$450.00

GRANT NUMBER XV

Final Report

Project Number: 7-E-178X

Grant Number: OEG-1-7-070178-4299 (010)

DEVELOPMENT AND EVALUATION OF A SPECIAL ADMISSION PROGRAM FOR DISADVANTAGED STUDENTS

Submitted by

Ronald L. Montgomery,
Assistant Professor of Sociology

Franklin College
Franklin, Indiana 46131

August 12, 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.

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INTRODUCTION

This is the final report of work done in developing a special program for the economically and educationally disadvantaged students. The foci of the project were in three areas: development of a compensatory program suited for Franklin College of Indiana; development of evaluation instruments; surveying existing programs on other campuses.

PROBLEM

At present, the colleges and universities surveyed in Indiana admit a limited number of students who can be classified under both headings of economically and educationally disadvantaged. Most of the smaller schools admit these students with no formal program to help them succeed academically, or they have patchwork programs whose effectiveness is questionable. Only three universities--Indiana University, Indiana State University and Ball State University--have comprehensive programs to aid the disadvantaged students.

Franklin College admits 69 students who can be classified as economically disadvantaged, but of this number few would be classified as "risk" or educationally disadvantaged. Those "non-risk" but economically disadvantaged students are provided with grants-in-aid or participate in work-study programs. However, those students who are both economically and educationally disadvantaged are admitted with no formal program to help them. This may indicate a "sink or swim" philosophy and one would anticipate a high attrition rate among these students on any of these campuses surveyed. Franklin College, however, has shown concern over this situation and has set about to design a program to not only help the students who are presently enrolled but also to provide to more students in this category an opportunity to pursue their education to a successful completion.

In reporting their research of "Achiever Personality and Academic Success Among Disadvantaged College Students", Doris Miller and Patricia O'Conner cited

the analysis of the situation of the disadvantaged students in higher education by S. A. Kendrick[1]. Kendrick, executive associate on the College Entrance Examination Board staff, reported that despite efforts to relax admission standards, provide adequate financial aid, and intensive recruiting, he foresaw a bleak future for bringing into higher education those youth who can be categorized as disadvantaged, particularly Negro disadvantaged youth. He proposed a future segregation of selective colleges. Kendrick predicted this pessimistic future because of three major factors:

1) of the relatively small proportion of Negro high school seniors who would be expected to score high on the verbal section of the SAT, only an estimated one to two percent would likely score 500 or above, and only ten to fifteen percent would score 400 or above.
2) although it might be inferred that the SAT is biased against the Negro student, Cleary in 1966 found that this was not necessarily the case. He found that when SAT scores were used as predictive variables, the college grades of Negroes were not underestimated.
3) failure of remedial programs designed to either raise SAT scores or to improve the academic performance that SAT scores predict when these programs are instituted at such a late teenage level.[2]

Other studies, particularly Green's and Farquhar's study of Negro and white high school students, have indicated that intellective predictors may not function in the same way for Negroes as they do for whites. This study found that although Negroes' median score on the SAT is lower than whites', a higher proportion of Negroes than whites who begin college obtain degrees. In other words, this study concluded that SAT scores cannot be used in the prediction of academic success for Negro students in the same way that they are used for whites.

[1]Journal of Social Issues, Vol. XXV, number 3.
[2]ibid

The high correlation between SAT scores and college grades reported by Cleary might indicate factors other than intellective operating to influence academic success of Negro students. Of special significance, are studies which indicate that out of the estimated total number of youth classified as "culturally disadvantaged", only two percent go to college; and a lesser percent actually finish college. However, of those students who are involved in "Upward Bound" programs, eighty percent do go on to higher education. Although very few reports are available which explicate work with non-intellective variables, it seems that since remedial programs concentrated on intellective variables are generally failures, then "Upward Bound" programs are working with the non-intellective, motivation variables.

Motivational variables which are not measured by admission tests, are thus seen as important. Although they are seen as important and taken for granted in influencing the achievement of white students who score high on the SAT, they are usually overlooked when the low SAT scoring, disadvantaged students are considered. Therefore, it would be profitable for any college, which is to participate in admitting the disadvantaged youth, to use non-intellective predictors along with intellective predictors in their admissions procedure.

In order to modify the conditions that Kendrick predicted, programs such as the Special Programs for the Disadvantaged which consider motivation variables are needed to provide not only direction and assistance to these youth who possess untapped talent and ability, but also to provide research data to be used to better construct effective programs in higher education for disadvantaged youth. In considering the proposed "Special Program for Economically and Educationally Disadvantaged Students", it must be recognized that not only are the students in the target audience economically disadvantaged, they are classified as "risk students" as predicted by the traditional admission criteria of Franklin College.

As can be seen from the summary discussion, there are many unanswered factors which contribute to the "risk" classification; and it is difficult to isolate which factors are most crucial. One thing that is difficult to work with is the global concept of achievement motivation. Atkinson postulated in 1964 that the tendency to strive for success is the combination of positive and negative effects of hope of success, fear of failure, perceived probability of success, and the incentive value of the task goals. Intricately related to the second and third variable is the internal control variable. As defined by Rotter, internal control represents a person's belief that rewards follow from, or are contingent upon, his own behavior. Conversely, external control represents the belief that rewards are controlled by forces outside himself and may occur independently of his own action. Seeman uses a similar concept, powerlessness, in reporting his studies of low-income and minority groups. He defines powerlessness as the expectancy of probability held by the person that his own behavior cannot determine the outcome he seeks. Patricia Gurin contracted two subscales in measuring internal control. One is based on items having first person referent, and the other has a third person referent.

Edgar Epps has extracted the concept of "competence syndrome" which includes (a) ability, (b) favorable self-evaluation, (c) optimism about opportunity for success, and (d) achievement values (incentive). Epps proposed, from his study, "an identifiable cluster of personality-attitude variables that are associated with high achievement independently of ecological factors."[3] The ecological factors were race, region, socioeconomic status, and family, but they served as the mediating setting in which personality, motivation, and aspirations developed. Epps further characterized high achieving students who "tend to have high self-concept of ability, a strong sense of control over the environment, and high aspirations." Further, these students, "tend to be lower than average in

alienation, conformity, and perception of limited opportunities."[4] He characterized low achieving students as tending in the opposite direction regarding these variables.

Brookover, et al. (1965) approached this problem with high school students by attempting to help individual low achievers improve their performance and raise their aspirations. He demonstrated that individual student's school grades can be improved by changing parents' perceptions of students academic ability.

Most surveys of compensatory education programs have discovered that while these programs are directed toward attempts to modify basic cognitive processes and to change the level of content mastery or to change motivation, most have provided increases in quantity and very little improvement in quality of efforts directed toward improving function and with little improvement in the quality of program offered. In regards to content mastery, most programs were found to be concerned with an enriched or watered-down presentation of material to students; and those programs which focused on increasing motivation and modifying attitudes showed more promise in reaching the objectives of compensatory education.

Harold Cohen found that programs which made efforts to change cognitive functions are very traditional and have little that is new in education with little connection to current theory of learning and behavioral organization. Except for one exception, none of the programs utilized behavioral analysis and contingency management in the learning experience. Cohen proposes that programs should apply behavior analysis and contingency management.

THE COMPREHENSIVE PROGRAM

This program is based on a sound theoritic foundation. The three basic concepts that are used are competence syndrome, behavior analysis, and

[3]Epps, Edgar G., "Family and Achievement: a Study of the Relation of Family Background to Achievement Orientation and Performance Among Urban Negro High School Students". U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, Feb. 1969.
[4]ibid

contingency management. It is directed toward modifying the competence syndrome in the direction which characterizes high achieving students, and it utilizes behavior analysis and contingency management in the instructional aspect of the program to reach its objective.

The Special Program for Economically and Educationally Disadvantaged Students will admit those students who are classified as "risk" and do not conform to the usual admissions criteria; therefore, it is a modified admissions procedure as well as a compensatory education program. It consists of an in-residence summer portion and an academic year-in-residence portion in which tutoring for each individual student will be provided in conjunction with a modified or reduced class load. The reduced class load will be made possible by the four credit hours earned during the summer portion. In the courses offered, the instructors will employ behavior analysis with the focus not only on the weaknesses, but also on the student's strength, style and preferences. From this analysis of individual learning behavior, the instructor will help the student determine a plan of action to modify the inappropriate learning behavior. An important part of this approach is the programmed course material which is directed toward contingency management. This material will help limit the contingencies surrounding the learning situation so that the possible outcomes can be controlled making it possible for the student to anticipate the consequences of his learning behavior. This approach will also help him recognize that he has control over the outcome of his own efforts. The programmed material will also make it possible for the instructor to provide the student with individualized instruction by being allowed to spend more time with the students who need more help. It also helps the teacher and the student to evaluate or anlayze the learning behavior.

Summer Portion: (four credit hours)

This portion of the project is four weeks long beginning just after summer school and ending just prior to the fall semester. It will be held just prior to the beginning of the academic year in order to obtain maximum transfer of the anticipated educational advantage from the work students performed in the summer to the fall semester. The summer portion is group oriented to provide support for the student in the academic atmosphere. Three non-credit courses and one course with four credits is offered. There are two classes with ten students each. In addition to the courses, a counseling program is provided to make available to the students someone to whom to turn for help, encouragement and advice. The counselor will also provide individual educational occupational counseling to the student.

Courses Offered in the Summer Portion

a. Language Arts

1) Developmental Reading

This is a non-credit course with the objectives of: (a) the student will increase his reading speed and (b) the student will increase his reading comprehension. Programmed material is used which has built-in reinforcement and which allows each student to progress at his own pace. This course is directed to facilitate improved self-concept of ability, creating and/or increasing his internal control and attempting to create the student's optimism about possibilities for success.

2) Developmental Writing

This is a non-credit course. Its objective is: (a) student will be able to construct grammatically correct and coherent papers. It is

also a programmed course which allows each student to progress at his own pace. It focuses on grammar and expression difficulties. The materials in this course also have built-in reinforcers (or incentive values).

b. College Orientation

This is the third non-credit course offered. It focuses upon study techniques, exam writing, note-taking (listening) and the use of the library with a portion of this course providing supervised study periods. During these study periods, the student has an opportunity to develop his study skills.

c. Sociology: (four hours credit)

This is offered as a four hour course which is one of two social science courses out of four required of all students at Franklin College. This course is aimed at helping the student understand something of his society and of himself in interaction with his environment. The reading is not extensive, but the comprehension is challenging. Although the non-credit courses have programmed reinforcers, this course is directly focused upon the achievement value compenent of the competence syndrome because it gives four hours credit as a regularly required course, and it is assumed to facilitate the opportunity to establish identity.

All of the non-credit courses are related to the credit course by using readings that are related to the sociology course and by doing writing related to that course. Thus the effect is of one course rather than four.

Academic Year Portion: (24 or 25 credit hours)

This portion consists of two aspects. Each student has his own tutor with whom he can establish a significant degree of rapport. This tutoring situation

is directed toward providing the individual student with individualized instruction and personal attention so that he can begin to identify with the educational objectives as he develops his scholastic ability and to help him identify with the Franklin College Community. The tutors are regularly admitted students who have identified themselves with the objectives of the project and who can identify with the problems facing the project's students.

The other aspect is found in the academic area. The fall semester has a reduced class load, and the spring semester will continue a minimum full-time load. There will be no attempt to set these students off or in any way call attention to them (although it is recognized that their identity will be known to some of the other students and faculty). Although special efforts will be made to involve them in campus activies, their participation as a specific, defined group is not encouraged.

Courses Offered in the Fall Semester of the Academic Year Portion

a. L. S. T. 01: Introduction to Liberal Studies (4 hours)

This is a four hour course required of all regularly admitted students. As described in the College catalog, it is English composition, based upon extensive reading of individual books and discussion of the basic theme, "Man and the State". The special student academic advisor will direct the students to those sections of this course which are taught by a professor who has less difficulty in relating to students, and who is better able to relate material to the students' need.

b. L. S. T. 03: Logic and Mathematics (4 hours)

This is a four hour course required of all regularly admitted students. As described in the catalog, it focuses on, "the nature and scope of deductive systems by means of elementary symbolic logic, with examples taken from mathematics and everyday life". The student advisor will function as in L.S.T. 01.

c. Physical Education: (1 hour)

This will be the regular P.E. course taken and required of all students.

d. Urban Sociology: (3 hours)

This is a three hour course which focuses on the study of the historical development, population characteristics and trends, ecological patterns, institutions and problems of cities and urban areas.

e. Language Arts: (non-credit)

The two courses in this sequence, reading and writing, will be continued in a combination under one course in order not to interfere with the project's students' time budget. It will be required of all project students. It is directed toward providing support in the other courses. In the second half of the semester the student can test out of it by writing an adequate composition and presenting an oral report to the instructor and class.

Courses Offered in the Spring Semester of the Academic Year Portion

a. Language Arts: (non-credit)

The format of this course will remain the same. The student can test out of this course by writing a composition and presenting an oral report to the instructor and the class. He will not be forced out, however.

b. L. S. T. 02: Introduction to Liberal Studies (4 hours)

This is a four hour course that is required of all regularly admitted students. It is a continuation of L.S.T. 01 and as described in the Catalog, it focuses on English composition based upon extensive reading of individual books and discussions of the basic theme, "The Problem of Identity." The advisor will guide the project students to the appropriate sections.

c. L. S. T. 04: Introduction to Philosophy and Religion (4 hours)

This is a four hour course which is required of all regularly admitted students. The focus is upon the study of the responses given by Western man to his persistent inquiries concerning his human nature and his ultimate destiny.

d. Elective: (3 or 4 hours)

This course may be the remaining one of the two required social sciences with four hours credit or a three hour course which will provide the student with an opportunity to explore a course in which he may have special interest as a sampling of material for a tentative major.

e. Physical Education: (1 hour)

This course will complete the student's P. E. requirement.

As can be seen, their is an effort to integrate the Special Program into the regular academic offering. While the student is in the project, he is accumulating required courses, building up his credit hours, and establishing grade points. This approach makes it unnecessary for the student in the project to continue an additional year, time spent in school which prolongs his academic goal and occupational goal attainment.

Counseling

In addition to the courses offered, a counseling program will be instituted. Two counselors are available to the students to provide help in personal problems as well as provide individual educational and occupational counseling. One counselor is a social worker who will have the primary responsibility of individual, personal, and family counseling and also the primary responsibility of the students' group counseling and parental group counseling. The other counselor will be a psychologist who will carry the responsibility of testing and individual educational and occupational counseling. During the summer portion,

the counseling is both the individual and group approach. The individual approach has three primary foci. The first is upon problems presented by the students, such as problems at home and campus adjustment. This focus will lead into the second, the modification of the competence syndrome. The counselor will be given the results of the competence syndrome scale to be used as guidelines for the direction for counseling. This will lead into the third focus, helping the student determine appropriate educational and occupational goals. An aid to direct this counseling aspect will be aptitude and interest scale results.

The group approach will focus on problems common to all the students in the program. These group discussions will focus on the purpose of the program, the students' evaluation of the program, the benefits of the program, and also use speakers procured through the Chamber of Commerce to discuss career opportunities for persons with college degrees. In conjunction with the student group sessions, parent group meetings will be held and focused on the various aspects of the program, and the importance of parental support of the students' efforts.

During the winter and spring semesters, the counseling is limited to the individual approach, unless the counselors and the students wish to continue the group sessions. However, the individual counseling will give more intense consideration to developing plans for occupational careers and the appropriate courses required.

Tutoring

Tutoring is made available during the academic year. Each of the 20 students will be assigned to a tutor. During the first year of operation, the tutors will be regularly admitted students of sophomore or above standing and may be currently enrolled in the courses being taken by the project student; but they must have an above average grade in that course. However, most of the tutors will be drawn from those students who have already successfully completed the course. During

the second year of operations the majority of the tutors will be students who have "graduated" from the project courses and have entered into the regular academic peogram. Although the activities of the tutors are directed toward academic help, the tutors will attempt to establish a relationship that is sufficient enough to help the project student identify with the academic community. The tutor will also act as the "sponsor" for the project student in involving him in campus activies, i.e., athletic events, student government, etc. In order to help the tutors understand the objectives and purposes of the project, they will meet in an orientation meeting with the project staff. Thereafter, a tutoring staff meeting will be held at the end of each month to discuss the progress of the project, the progress of the individual student, and the need for program modification as well as a modification of their attitudes if it is needed. Every two weeks the tutors will meet with the student's counselor to discuss better ways of assisting him by changes in approach to the student and to better understand the student who is being tutored. In other words, these will be a type of supervisory meetings. It will also be the responsibility of each tutor to meet with the project's instructors to discuss the special academic needs of the student he is tutoring.

FACILITIES AND PERSONNEL

Because of Franklin College's past stated commitment to the education of economically disadvantaged students, the schools administration proposed, encouraged the exploration of, and the establishment of a compensatory education program for this category of students who evidenced difficulty in academic achievement. As a result of this interest, Franklin College received a seed grant from the Consortium on Research and Development to develop this program. Although a faculty member was primarily responsible for developing the general framework for the program, administrative officials are involved in its

implementation; and through direct faculty vote, the faculty unanimously endorsed its purposes and establishment.

Within the rough framework which was presented to them, the Director of Admissions and Financial Aid is working closely with the program personnel to secure additional financial aid, as well as increasing efforts to identify those students within the target population who can benefit from this program. The Vice President in charge of Development is also working to secure community and alumnae continued support for this program. The Director of Institutional Research who is also the Director of the School of Instruction, has assisted in the project from its initial conception.

Although there has been little student involvement at this time, the most important part of the future development of this program will be the evaluation and suggestions for modification of the program by the program students and their parents. Another group who will be involved in the future development of the project will be The Consortium on Urban Education-Indianapolis. Efforts will be made through the Franklin College representative to this group to coordinate the activities of this program with those of the other institutuions of higher education and social agencies which make up the Consortium.

a. Personnel

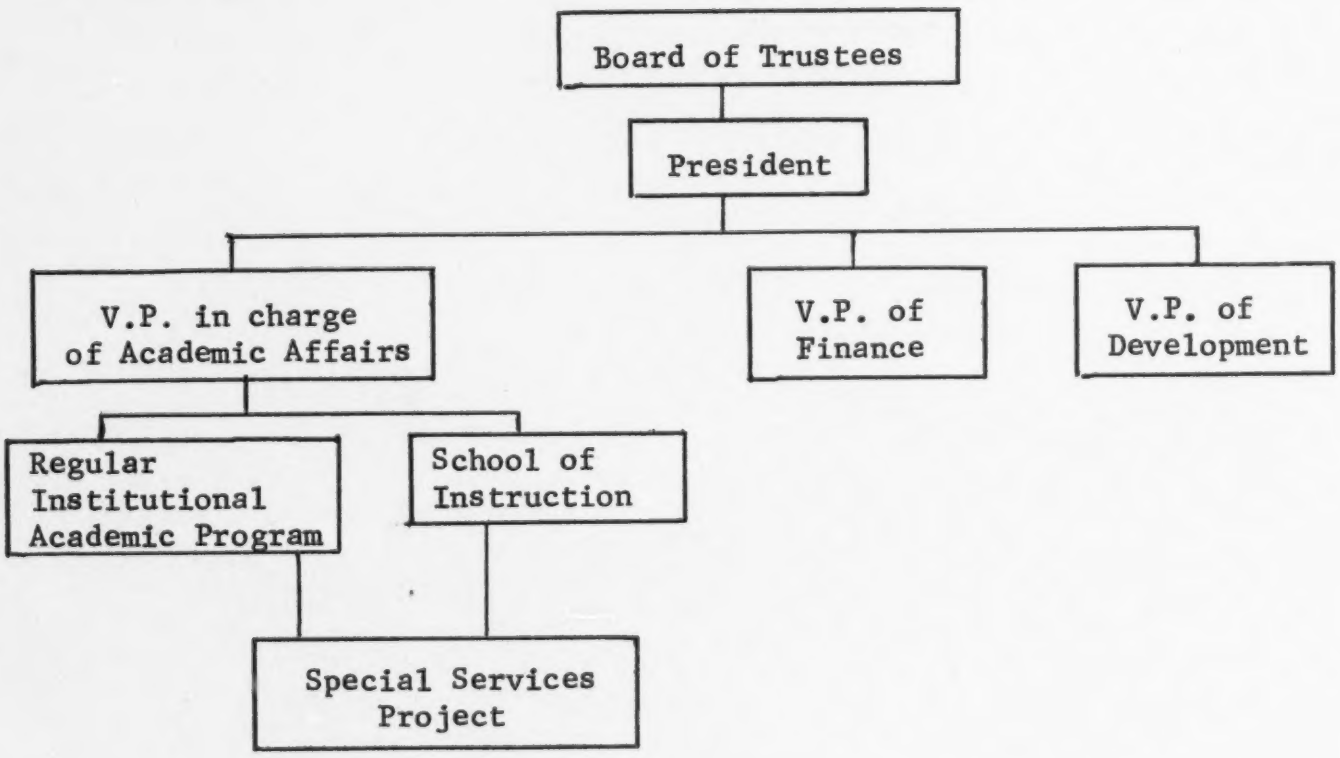
1. The Program's Board of Directors

The Board of Directors will coordinate the various activities, plan for future modification and growth, and advise the program's personnel regarding innovations. The Board will also act as the admissions committee for the program. It will also be responsible for promoting community and alumnae relations. A final function of the Board will be consenting to the hiring of various program personnel.

The members of the Board will be selected on the basis of their position within the power structure of the College, their support of the program, their ability to identify with the general and special problems of the program's students, and the amount of time that they can devote to the program and its future development. There will be 14 members; the President of the College as an ex-officio member, the Director of Admissions who will act as the chairman of the program's admissions committee, the project coordinator who will act as the chairman of the Board, the Dean of the College, two program students, two parents of program students, two regularly admitted students, two faculty members and two community residents.

Because the total Board is too cumbersome to act as the admissions committee of the program, the Director of Admissions, the project director, one program student, one parent, the Dean of the College, and one faculty member will act in that capacity.

Below is the Institutional Organization Chart which includes the position of the project's director.



The fiscal and administrative responsibility of the program will reside with the power of the project's board of directors.

Since the Board of Directors is representative of the interest of those persons involved in the program, the community members and students policy making powers will be exercised through the respective board members. Aside from this area of decision making, both the students' and parents' evaluation of the program will be constantly monitored in order that modifications of the program can be made. Although all the school sponsored organizations on campus are open to the students participation, the Black Student Union and the Religious Activities Board welcome the program students.

2. Program Coordinator

This position will be filled by the Director of Institutional Research of Franklin College, who is also the Director of Summer School, Franklin College Coordinator of the Consortium on Research and Development, the Director of the School of Instruction, and the Franklin College coordinator for the Consortium on Urban Education-Indianapolis.

3. Project Director

This position will be filled by a Negro who holds a B.A. in education and who is formerly an assistant coordinator of the Phase Program at the Atterbury Job Corps Center. He taught in a southern high school before returning to the Midwest to assume a position at Atterbury.

4. Primary Counselor

This position will be filled by a black male who has a M.A. in social work and who has had at least two years post-graduate social work experience. The work experience should have been in an inter-city agency, preferably as a school social worker or a settlement house type of situation. This person will carry the major responsibility for coordinating and carrying on the counseling

program, for record keeping, consultation with the tutors and instructors, and keeping the Project Director abreast of the activies in the counseling area. This person will be directly responsible to the director.

5. Counselor

This position will be filled by a person who has at least a master's degree in psychology. He will be a part-time staff person and will carry the major responsibility for administering, scoring and interpreting the results of the test. He will also assist in the individual counseling. Although his activies will be coordinated with the primary counselor, he will be directly responsible to the director.

6. Language Arts Teacher

This position will be filled by a person who has at least a master's in language arts education, and preferably black, and had experience working with inter-city youth either as a teacher or some other similar position. This teacher will be responsible for implementing the curriculum in language arts, developing syllabi, and measuring the achievement in the language arts portion of the program with the aid of standardized tests. This person is also responsible for the study skills course. This person will be directly responsible to the project director.

7. Tutors

The tutors will be regularly admitted Franklin College students.

8. Facilities

All the facilities of the school will be available for use by the program personnel and students. This includes the library, the language lab and its equipment, study space, and room and board accommodations.

Method of Evaluation

1. Selection of Students

There will be 20 high school graduates who will be defined as economically disadvantaged as defined by Title I of the Higher Education Act of 1968. They will be under 21 years of age, and who are classified as "risk" students as determined by the present admission criteria used by Franklin College of Indiana. As defined by this program, the educationally disadvantaged students are those who have not been able to take advantage of their educational opportunities because of socio-cultural and economic factors which have interfered with their academic performance in the past.

These 20 students will be selected from the Greater Indianapolis Metropolitan area with an estimated population of about 1,150,000. The focus of recruitment efforts will be in three inter-city high schools; Attucks, an all black school, Wood High School and Tech High School. Three additional high schools will be included from this target area. They are Franklin Community High , Shelbyville High School, and Columbus High School. High school counselors and social service agencies, including Upward Bound programs will be contacted for possible candidates. After the student has been referred, a program counselor will interview him and his family to assess their needs and interest in the program. The project's board of directors will act as the admissions committee with the Director of Admissions acting as the chairman. Although the program's admissions committee will consider the usual criteria for admission, the main consideration for admissions will be the recommendations of the referring agents, the available IQ scores, and the recommendations of the project's counselor who interviewed the student and his family, and the prospective student's statement of purpose.

The economic and educational needs of the students will be identified through the admissions procedure as well as through pre-program testing to

determine levels of educational achievement. The economic needs will also be determined by the parental financial statement along with the family interview. The economic needs will be met in part by the provision of room and board for the admitted students and through the full tuition granted. Franklin College will provide full tuition and room and board for each student during both the summer and winter portions of the program. After the student has successfully completed the first year, they will be considered for participation in the work-study program, and other grant-in-aid programs.

The educational needs of the student will be met through the proposed program. The implicit assumption of this program is that the past and potential future failures for each of these students are due to the combination of two or more of the following:

1) financial inability of the student to meet the cost of higher education which prevents him from viewing college as a possibility,

2) failure to use the measured but unfilfilled intellectual ability to achieve scholastically because of the lack of basic academic skills, such as reading, writing, and study skills,

3) the inability of the student to see the value of higher education,

4) the lack of guidance in using higher education to realize his educational and occupational goals, and

5) belief that he cannot influence his own future.

In order to meet these needs, Franklin College is committed to institute a compensatory education program which will include the following:

1) the provision of economic aid to the student through providing full tuition and room and board,

2) the provision of educational aids through the institution of a two phased program of instructions offered during both the summer and academic year during which the student may earn 24 to 25 credit hours,

3) the provision of guidance, counseling, and tutoring directed toward focusing on career opportunities, personal difficulties, and individualized educational needs.

2. Evaluation

Although it may be assumed that the program was effective because of high percentage of the program's students achieving the minimum grade point average required by the school of all its students, this might be an appealing pit-fall. The opposite may be true for assuming the program's failure. Therefore, it will be desirable to compare the the S. P. students' actual GPA with the predicted GPA using Epps' competence syndrome scale along with the traditional prediction criteria.

This project will have three additional areas to be evaluated:

1) The effectiveness of the Epps competence syndrome scale as an effective aid in predicting academic success; the 1970 regularly admitted, incoming freshmen will be given the scale. A multiple correlation will be done among the variables of the scale and the traditional admission criteria at the end of the 1970-71 academic school year.

2) The overall effectiveness of the compensatory program in improving on the S. P. students' predicted GPA. The S. P. students' predicted GPA, using traditional variables, will be compared with their achieved GPA at the end of the 1970-71 academic school year.

3) The effectiveness of the program to modify variables of the competence syndrome. These variables will be evaluated by the pre and post-test method using the scales employed by Epps in his study and which appear to have a high correlation with achievement, namely:

a. Self-Evaluation: 1) Self-Concept of Ability Scale (Brookover)
2) Guttman Scale (Rosenberg)

b. Sense of Efficacy or Potency: 1) Alienation-Fear Success Scale (Rosenberg)
2) I. E. Scale (Gurin)

c. Perceived Opportunity of Success:

1) The Awareness of Limited Opportunity Scale (Landis & Scarpitti)

d. Achievement Values: 1) Preferred Job Characteristics Scale (Farquhar and Epps)
2) Lower Class Value Scale (Epps)

These measures will be administered as the S. P. students enter the program and readministered at the end of the 1970-71 school year. The scales labeled #1 will be used as the test-post-test scales and those labeled #2 which are highly correlated with scales labeled #1 will be administered at the beginning of the program, at the end of the summer portion, and at the end of the first semester. This method is used in order to monitor the progress of the program and might point to some modification needed in the program when it is continued the following year.

The ability component will not be evaluated for modifiability. It is treated as a given or a constant variable, along with lower socio-economic status. However, the selection of the S.P. students will be based partially on the measured I.Q., SAT Verbal and Math scores, and the high school counselors' recommendations.

The credit courses offered during the summer and academic year portions will be measured by the professors of those courses using the method used for grading their other students. The behavioral objectives of the language arts courses will be used, of course, as the basis for these courses. Since the language arts courses will be offered on three levels: summer, first semester, second semester, the effectiveness of these courses will be measured at its three intervals. The summer portion will be evaluated by the test-post-test method. The first test-post-test method. The first test will be administered at the beginning of the summer session and the post test after the summer session, immediately prior to the first semester. At the end of the first semester, a composition will be written (post-test) by the student; and a composition of greater demand will be required

for the students to test out of the language arts courses during the second semester.

FUTURE PLANS

The program will be continued after the first year with the anticipation that it will be accepted and integrated into the institutional offering. The data that is collected during the first year will be used to adjust the program so that its weaknesses can be filtered out.

All the data related to this project will be made available to the Consortium on Urban Education-Indianapolis.

INNOVATIVE FEATURES OF THE PROJECT

Not only must the college doors be opened to more disadvantaged youth, but also efforts must be made to help these youth successfully complete their college careers.

A report will be prepared telling in detail how the project was conducted. This will include syllabi of the courses, tape recordings used in the language arts courses, recordings of the group counseling sessions (parents and students), and reviews of the test results. After receiving proper authorization, an abstract of this report will be mailed to the colleges and universities in the state. Follow-up studies will also be made available.

An important innovated feature of this program is the use in combination of various individual program techniques which some schools have used singly. The Franklin College program combines all these features of techniques into a comprehensive program which will include a modified admission procedure, tutoring, group counseling for parents and students, individual counseling for students, reading skills and writing skills courses, study skills course, reduced class load, a modified continuation criterion, and integration of the program into the regular college program.

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APPENDEXES

APPENDIX A

BUDGET SUMMARY

Budget Bureau No. 51-R-0830
Approval Expires: 6 • 30 • 71

NAME OF PROPOSER	DATE OF ACTIVITY FROM (MONTH, DAY, & YR.)	TO (MONTH, DAY, & YR.)

CATEGORY	SPECIAL SERVICES FEDERAL FUNDS REQUESTED	PROPOSER CONTRIBUTION	OTHER FEDERAL FUNDS REQUESTED	OTHER
A. DIRECT COSTS				
1 PERSONNEL (LIST EACH POSITION AS A LINE ITEM, USING ONE LINE FOR TOTAL EMPLOYEE BENEFITS)				
¼ time Administrative Coordinator	3,000.	300.		
Project Director, FT	12,000.	380.		
Primary Counselor	10,000.	385.		
Counselor ½	5,000.	245.		
Language Arts ½	5,000.	245.		
Secretary, FT	4,000.	172.		
Instructor, Summer Course	1,000.	48.		
Tutors	4,000.	48.		
2 SPACE RENTAL AND EQUIPMENT				
A SPACE RENTAL				
B EQUIPMENT	200.			
3 COMMUNICATIONS & UTILITIES				
A TELEPHONE				
B UTILITIES				
4 TRAVEL				
A STAFF TRAVEL	100.			
B CONSULTANT TRAVEL	400.			
C TRANSPORTATION OF STUDENTS	100.			
5 SERVICES (CONSULTANT FEES ARE IN THIS CATEG.)	2,300.00	59,100.00		
TOTAL DIRECT COSTS	46,700.00	60,923.00		
B. INDIRECT COSTS	8,609.00	26,153.00		
C. TOTAL COSTS	55,309.00	87,076.00		

32.

APPENDIX B

Description of Reading Course Material

READING LABORATORY SERIES - Developed by Don H. Parker

These multilevel reading materials develop reading skills in the areas of comprehension, rate, vocabulary, and word study skills. The Reading Laboratory Series individualizes the teaching program. Individual differences are accommodated without grouping. The program also provides a continuous sequential development of reading skills and immediate feedback as students correct their own work, thus freeing the instructor to give individual help where it is needed.

Reading selections and exercises are grouped at the levels of reading ability normally found at a particular grade level. The student begins the program at his functional reading level which is initially determined by a Starting Level Guide included in the Student Record Book.

With the Reading Laboratory Series, instructors have more time for creative teaching because students work independently much of the time, and paperwork is kept to a minimum. The student uses his Student Record Book or appropriate work sheet to record his responses to exercises included with the program components. Then he corrects his own work with only occasional guidance and spot-checking from the instructor. This immediate feedback helps the student reinforce his skills and gain insight into his weaknesses.

Next, the student records his scores and charts his performance on progress charts included in his Student Record Book. In this way, each student is kept aware of his progress and the information aids the instructor in programming his teaching.

MAJOR COMPONENTS - Power Builders

These reading selections help students develop vocabulary, comprehension, and word study skills. From twelve to twenty selections are provied at each

reading level. Subject matter varies to include social science, biography, fiction, science, and philosophy. Because the interest level and literary value of these reading selections are extremely high, the upper levels of the Reading Laboratory Series are fully applicable for college students requiring reading improvement. Also included in the 4-page Power Builders are comprehension checks, and exercises for developing vocabulary and word attack skills. Answer keys are used by the student to check his responses.

Rate Builders

Rate Builder cards are used to develop speed and concentration. Each card includes a short reading selection followed by comprehension questions answered in the Student Record Book. The instructor limits reading and answering time to three minutes. Students check their responses with the Rate Builder Key Booklet.

Listening Skill Builders

Listening activities are used throughout the program to develop the students ability to sift, retain, and understand what he hears. The instructor reads listening selections from the Teacher's Handbook and students answer comprehension questions in their Record Books.

Listening-Notetaking Skill Builders

Students listen carefully as the instructor reads the lesson from the Teacher's Handbook. Then they organize and record their thoughts on paper, and compare their notes to models provided.

Reading Laboratory IVa is especially relevant for college use with reading levels ranging from 8.0 through 14.0. For students with more severe reading problems, Laboratories IIIa (3.0-11.0) and IIIb (5.0-12.0) may be more appropriate.

Study-Reading College Textbooks (Frank L. Christ)

This book, which reprints selections from the latest editions of 15 leading

college textbooks in as many fields, offers many new approaches to successful use of these basic college materials. Study-reading methods employed in SRA Reading Laboratories guide the student through his work on each selection.

The unique "Textbook Inventory" measures the student's initial efficiency in using his textbook as a learning resource.

Techniques for previewing an entire textbook are applied to each selection, and the student is required to prepare his own preview questions about the material.

Comprehension and retention, emphasized rather than speed, are checked by questions following each selection. Review summaries of each selection are written by the student.

Model preview questions and review summaries for each selection, as well as answer keys to the comprehension checks, are provided for comparison in the back of the book.

Additional textbook preview blanks and chapter study worksheets allow the student to carry these principles further into a carefully directed study-reading of his own textbooks.

The 15 reprinted selections are from textbooks in the following areas:

Humanities: Composition-Speech-Introduction to Literature-Music Appreciation

Natural Sciences: Biology-Chemistry-Physics

Social Sciences: Western Civilization-American Government-Economics-Sociology-Psychology

Mathematics: Algebra-Calculus

Personal Adjustment: Health Education

APPENDIX C

Description of Material for College Orientation

HOW TO STUDY - (Ralph C. Preston)

"How to Study" draws the inquisitive student through a simple yet extremely effective formula for studying. Complete materials include the text, a teacher's manual, Study Habits Checklist, and an Administrator's Manual for Checklist.

Contents: Introduction: Study Skills and Study Habits; Chapter 1 - Planning Your Time for Study; Chapter 2 - The Physical Setting for Your Study; Chapter 3 - The Mastery Technique; Chapter 4 - Helps to Study; Chapter 5 - Getting Ready for and Taking Examinations; Chapter 6 - Better Listening and Note-Taking; Chapter 7 - Building Your Vocabulary; Re-evaluating Your Study Habits; Study Habits Checklist.

APPENDIX D

Description of Writing Course Material

BASIC COMPOSITION SERIES III (developmental)

This program provides a structured sequence of lessons and writing assignments that allow students to advance at their own rate as they learn one skill at a time. Series III develops basic writing skills using three separate laboratories.

Part 1: Narration (11 lessons) - The student begins by relating his own experiences and progresses to writing imaginative and highly structured narratives.

Part 2: Description (9 lessons) - The student gains skill in observing by selecting the important details and developing methods of organizing them. As he learns to polish his writing, he focuses on skills of transition, emphasis, and conciseness.

Part 3: Exposition (10 lessons) - Here the student learns to examine his experiences critically, and then gains skill in developing his ideas through concrete details, definition, and comparison and contrast.

APPENDIX E

Description of Counseling Materials

OCCUPATIONAL EXPLORATION KIT

OEK provides students with a systematic, personalized approach to job investigation. This program enables the student to consider his educational goals; evaluate his verbal and mathematical ability in terms of occupational needs; and discover what interest areas are most attractive to him. The kit takes students beyond the limiting experience of freinds and family, and helps them overcome personal misconceptions about particular job or occupational areas. The OEK program makes the student aware of the factors involved in career planning and then helps him investigate various careers that satisfy his abilities and interests.

The kit includes:

OCCUSCAN™ (Occupational Scanner): Helps the student base his job exploration on his own educational aspirations, abilities and interests.

360 Occupational Briefs: Each illustrated, four-page brief provides a thorough description of a specific occupation, including qualifications, training required, earnings, future outlook, etc., along with selected references for follow-up research.

16 Job Family Booklets: These booklets help students relate their interests and abilities to many occupations. In each distinct job area the full scope of opportunity is covered, specific jobs are described, and the qualifications and training necessary are detailed.

8 Guidance Series Books: An informative source of outside reading relevant to occupational exploration which will help students make critical decisions about their futures.

25 Student Record Books: Provide complete instructions for using OEK, and charts for recording information and decisions.

Guide for Counselors and Instructors: Instructions and suggestions for use in individual and group counseling sessions.

WIDENING OCCUPATIONAL ROLES KIT (developmental)

WORK™ leads each student to investigage for himself the complex areas of career opportunity, and to discover the interdependence of all occupations and how each makes a necessary contribution to the total economy. The program pinpoints the extent and type of education a student will need to prepare adequately for the occupation of his choice.

WORK includes:

400 Job Briefs: These briefs describe specific jobs in full detail to help students discover the occupational fields that best suit their interest and abilities.

5 SRA Junior Guidance Booklets: Illustrated texts introduce topics for class discussion or individual research. Titles include: "Planning Your Job Future", "Your Abilities", "All About You", "Make Your Study Hours Count", and "Getting Along in School".

35 Student Workbooks: Provides students with an individual record of their abilities, interests, achievements, current activities, hobbies, and the training needed to attain their vocational goals.

1 Teacher's Manual: Detailed step-by-step procedures for putting the WORK program into action.

5 Color Filmstrips: These filmstrips were developed by the Society for Visual Education to illustrate the vital relationships between education and job opportunity and to give students a realistic introduction to the working world.

This procedure resulted in five scales, each of which makes an independent contribution to the prediction of one or more of the dependent variables. The five scales are conceptualized as measures of self-perception which are related to a "competence syndrome."

Self-Perception Scales

The first scale in this category is called a self-concept of ability scale (Brookover, 1967). The original version of this scale consisted of eight items (five response categories). Factor analysis of 56 items including the items of the self-concept of ability scale resulted in adding two items to the scale. One item asked students "How do your parents feel about the grades you get in school?" Four choices of response were allowed ranging from very well satisfied to dissatisfied. The other new item stated that "A person like me has a pretty good chance of going to college." Choices (four) ranged from strongly agree to strongly disagree. The combination of items resulted in a scale with a possible range of 10 to 48. The correlation between the two versions of the scales is .96 for the total sample.

TABLE 56

Partial Correlation of Selected Variables With Grades, Verbal Ability and Expected Education (Total Negro Sample)

	Grades	Verbal Ability	Education Expectation
1. How Parents Feel About Grades	-.31 (-.40)*	.09 (-.12)*	.02 (-.17)*
2. Verbal Ability	.29 (.47)	1.00	.09 (.35)
3. Self-Concept of Ability	.13 (.42)	.06 (.32)	.23 (.45)
4. Perception of Limited Opportunities	-.04 (-.34)	-.13 (-.42)	-.13 (-.38)
5. Self-Esteem	-.01 (.25)	-.04 (.24)	-.04 (.24)
6. Alienation	-.05 (-.30)	-.06 (-.37)	-.05 (-.28)
7. Criticism of Education	-.02 (-.24)	-.03 (-.26)	.02 (-.17)
8. Conformity	-.08 (-.25)	-.15 (-.33)	-.06 (-.22)
9. I-E Index	.03 (.25)	.03 (.28)	-.02 (.18)
10. IAR Index	.10 (.28)	.08 (.30)	.01 (.18)
11. Achievement Attitudes	.01 (.20)	-.01 (.18)	.11 (.28)
12. Grades	1.00	.29 (.47)	.09 (.36)
13. Mother's Occupation**	-.05 (.02)	.05 (.11)	.03 (.10)
14. Expected Occupation	.06 (.21)	.00 (.16)	.18 (.32)
15. Expected Education	.09 (.36)	.09 (.35)	1.00
16. Father's Occupation	-.04 (.05)	.07 (.15)	.11 (.20)
17. Test Anxiety***	-.08 (.16)	.09 (.25)	-.02 (.16)
18. Self-Report n Ach	.03 (.19)	.03 (.22)	.01 (.15)

*Zero order coefficients are in parentheses.
**Mother's occupation was coded as follows: 1 = housewife; 2 = employed, low status job; 3 = employed, high status job.
***Scored for low anxiety in this analysis.

APPENDIX G

TABLE 33

Percent of Negro Students Expecting to Attend College by SES, Sex and Family Status

Expected Education	*Males Intact	*Males Mother Only	Females Intact	Females Mother Only
Southern High SES Students				
College	58%	42%	66%	59%
Noncollege	42	58	44	41
Total	100%	100%	100%	100%
	(N=126)	(N=122)	(N=150)	(N=128)
Southern Low SES Students				
College	41%	33%	33%	28%
Noncollege	59	67	67	72
Total	100%	100%	100%	100%
	(N=133)	(N=138)	(N=191)	(N=178)

Northern High SES Students	Intact N	Intact %	Mother Only N	Mother Only %	Intact N	Intact %	Mother Only N	Mother Only %
College	51	65	27	64	61	67	42	71
Noncollege	27	35	15	36	30	33	17	29
Total	78	100	42	100	91	100	59	100
Northern Low SES Students								
College	61	55	40	45	71	43	49	34
Noncollege	50	45	48	55	96	57	94	66
Total	111	100	88	100	167	100	143	100

*$x^2 = 6.452$, df = 1, $p < .02$. All other comparisons are not significant.

GRANT NUMBER XVI

SEED GRANT PROPOSAL

THE CREATION OF A PRODUCTION TYPE BASIC COMPILER FOR THE IBM 1130 COMPUTER TO BE USED IN THE TEACHING OF ELEMENTARY COMPUTER SCIENCE

Terry W. Keeling
Assistant to the Director of
Computer Science

BASIC is a high level computer programming language designed at Dartmouth College. It was designed for instructional purposes in secondary schools colleges and professional training.

The purpose of the project at Knox is to write a BASIC compiler for the IBM 1130 computer. A compiler is easiest described as a translator. It is a set of programs which translate the statements of a language into a set of codes to execute what the programmer wishes.

It is planned that BASIC be used at Knox in the instruction of the Introduction to Computers course, Computer Science 101. The programming techniques used in BASIC are universal to many languages, yet the language is elementary. This allows the student to spend a minimum of time mastering the language and to concentrate on learning programming techniques. Once the student has acquired a feel for the techniques the transition to other languages is easy. One of the features which makes BASIC desirable as a beginning language is its unformatted input/output operations. A present problem with the teaching of Fortran as a beginning language is the problems it creates when the learner must work through formatted read and write statements. With BASIC, emphasis can be placed on the art of computer programming, before emphasis is placed on learning programming languages.

It should be emphasized that this project is not to be confused with the mere writing of an interpretive system for BASIC in Fortran. Such a system would be too slow to be of practical value as a teaching tool.

Rather, I am proposing to construct a production type compiler which will allow several programs to be run swiftly and consecutively, making BASIC useful as a programming language as well as a teaching tool.

To accomplish this project I am requesting a USOE seed grant of $500 to cover the cost of creating the various programs. All such programs will be available to USOE.

Terry W. Keeling
Assistant to the Director
of Computer Science

GRANT NUMBER XVI

FINAL REPORT

A BASIC COMPILER

William C. Ripperger

Director of Computer Center
Knox College

Director of Computer Center
Knox College

PAGE 001

```
// JOB     0001 0002                    0002 0002

LOG DRIVE    CART SPEC    CART AVAIL   PHY DRIVE
  0000         0001         0001         0000
  0001         0002         0002         0001

V2 M05   ACTUAL 16K   CONFIG 16K

// EJECT
```

```
// ASM                                                                  SYSYM005
*LIST                                                                   SYSYM010
*SAVE SYMBOL TABLE                                                      SYSYM015
                                ABS                                     SYSYM020
03C0                            ORG     /1FE                            SYSYM025
01FE 0  0000            LNUM    DC      0           CURRENT LINE NUMBER SYSYM030
01FF 0  0000            LNINC   DC      0           + N                 SYSYM035
0200 0  0000            LP      DC      0           POINTER TO CURRENT INPUT SYSYM040
0201 0  0000            C       DC      0           CHAR CURRENTLY UNDER SCAN SYSYM045
0202 0  0000            TYPE    DC      0           TYPE OF CHRACTER IN 'C' SYSYM050
0203 0  0000            DBUG    DC      0           DEBUGGING SWITCH    SYSYM055
0204 0  0000            KBCP    DC      0           I/O DEVICE SWITCH   SYSYM060
0205 0  0000            PGOF    DC      0           PAGE OVERFLOW SWITCH SYSYM065
0206 0  0000            SREC    DC      0           CURR LOC IN STMNT RECORD SYSYM070
0207 0  0000            LREC    DC      0           LENGTH OF STMNT RECORD SYSYM075
0208 0  0000            LFRT    DC      0           LEFT OR RIGHT CHAR SWITCH SYSYM080
0209 0  20C0            UAD     DC      /4000-8000 BEGIN OF USER AREA   SYSYM085
020A 0  0000            LSW     DC      0           LISTING SWITCH      SYSYM090
020B 0  0000            PGCT    DC      0           BINARY PAGE COUNT   SYSYM095
020C    0028            HDNG    BSS     40          HEADING LINE (80 CHARS) SYSYM100
0234 0  3030            BCBL    DC      /3030       BLANKS              SYSYM105
0235 0  3030                    DC      /3030                           SYSYM110
0236 0  190A            PAGE    DC      /190A       PA                  SYSYM115
0237 0  100E                    DC      /100E       GE                  SYSYM120
0238    0002            PGNU    BSS     2           4 CHARACTER PAGE NO. SYSYM125
023A 0  3F00                    DC      /3F00       END OF HEADING LINE SYSYM130
023B 0  0000            ERSW    DC      0           ERROR INDICATOR     SYSYM135
0000                    NXID    EQU     0                               SYSYM140
0001                    ST      EQU     1                               SYSYM145
0002                    STL     EQU     2                               SYSYM150
0003                    PGO     EQU     3                               SYSYM155
0004                    PGOL    EQU     4                               SYSYM160
0005                    SYM     EQU     5                               SYSYM165
0002                    CON     EQU     2                               SYSYM170
023C    01FE                    END     LNUM                            SYSYM175

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   026 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// EJECT
```

```
// ASM                                                                  CLEAR005
*LIST                                                                   CLEAR010
0000    034C5059          ENT     CLEAR                                 CLEAR015
0010    17597000          ENT     POP                                   CLEAR020
002C    17922200          ENT     PUSH                                  CLEAR025
                        * SUBROUTINES TO MANIPULATE A PUSHDOWN STACK    CLEAR030
                        * STACK HAS DEFINED LENGTH IN BITS 0-7 AND ACTUAL CLEAR035
                        * LENGTH IN BITS 8-15 OF 1ST WORD               CLEAR040
                        * STACK ITEMS ARE STORED IN SUCCEEDING LOCATIONS CLEAR045
                        *                                               CLEAR050
                        * CLEAR STACK - I.E. SET ACTUAL LENGTH TO ZERO  CLEAR055
                        * CALLING SEQUENCE -                            CLEAR060
                        *     CALL    CLEAR                             CLEAR065
                        *     DC      STACK                             CLEAR070
                        *     ...     NORMAL RETURN                     CLEAR075
                        *                                               CLEAR080
0000 0  0000            CLEAR DC      *-*                               CLEAR085
0001 0  6908                  STX   1 CLX1+1     SAVE IDEX REGISTER 1   CLEAR090
0002 01 65800000              LDX  I1 CLEAR      GET POINTER TO PARAM   CLEAR095
0004 00 C5800000              LD   I1 0          1ST WORD OF STACK TO ACC CLEAR100
0006 0  E008                  AND     HFF00      MASK OUT ACTUAL LENGTH CLEAR105
0007 00 D5800000              STO  I1 0          PUT BACK TO STACK      CLEAR110
0009 00 65000000        CLX1  LDX  L1 *-*        RESTORE XR1            CLEAR115
000B 01 74010000              MDM  L  CLEAR.1    COMPUTE RETURN ADDRESS CLEAR120
000D 01 4C800000              B    I  CLEAR      RETURN                 CLEAR125
000F 0  FF00            HFF00 DC      /FF00      MASK                   CLEAR130
                        *                                               CLEAR135
                        * POP STACK                                     CLEAR140
                        * CALLING SEQUENCE -                            CLEAR145
                        *     CALL    POP                               CLEAR150
                        *     DC      STACK                             CLEAR155
                        *     ...     ERROR RETURN - EMPTY STACK        CLEAR160
                        *     ...     NORMAL RETURN                     CLEAR165
                        *                                               CLEAR170
0010 0  0000            POP   DC      *-*                               CLEAR175
0011 0  6914                  STX   1 POX1+1     SAVE INDEX REGISTER 1  CLEAR180
0012 01 C4800010              LD    I POP        GET STACK ADDRESS      CLEAR185
0014 0  D026                  STO     STAD       SAVE IT                CLEAR190
0015 01 C480003B              LD    I STAD       GET 1ST WORD OF STACK  CLEAR195
0017 0  E013                  AND     H00FF      MASK TO GET ACTUAL LENGTH CLEAR200
0018 01 4C180025              BZ      POX1       ERROR - EMPTY STACK    CLEAR205
001A 01 6580003B              LDX  I1 STAD       STACK ADDRESS TO XR1   CLEAR210
001C 0  6901                  STX   1 *+1        STACK ADDRESS TO MDM   CLEAR215
001D 00 74FF0000              MDM  L  *-*.-1     DECREASE ACTUAL LENGTH CLEAR220
001F 0  D001                  STO     *+1        ACTUAL LENGTH          CLEAR225
0020 00 75000000              MDX  L1 *-*        ADD LENGTH TO ADDRESS  CLEAR230
0022 0  C100                  LD    1 0          GET STACK ITEM         CLEAR235
0023 01 74010010              MDM  L  POP.1      SKIP ERROR RETURN      CLEAR240
0025 00 65000000        POX1  LDX  L1 *-*        RESTORE INDEX REG 1    CLEAR245
0027 01 74010010              MDM  L  POP.1      RETURN ADDRESS         CLEAR250
0029 01 4C800010              B    I  POP        RETURN                 CLEAR255
002B 0  00FF            H00FF DC      /00FF      MASK                   CLEAR260
                        *                                               CLEAR265
                        * PUSH STACK                                    CLEAR270
                        * CALLING SEQUENCE -                            CLEAR275
                        *     LD      ARG        PUT ITEM INTO ACC      CLEAR280
                        *     CALL    PUSH                              CLEAR285
                        *     DC      STACK                             CLEAR290
                        *     ...     ERROR RETURN - STACK OVERFLOW     CLEAR295
```

```
                        *      ...      NORMAL RETURN                                CLEAR30
                        *                                                           CLEAR30
002C 0   0000           PUSH   DC       *-*                                         CLEAR31
002D 0   6919                  STX    1 PUX1+1     SAVE INDEX REGISTER 1             CLEAR31
002E 0   D01D                  STO      T          SAVE ITEM                         CLEAR32
002F 01  C480002C              LD     I PUSH       GET STACK ADDRESS                 CLEAR32
0031 0   D009                  STO      STAD       SAVE IT                           CLEAR33
0032 01  C480003B              LD     I STAD       GET 1ST WORD OF STACK             CLEAR33
0034 0   1808                  SRA      8          GET DEFINED LENGTH                CLEAR34
0035 01  F480003B              EOR    I STAD       COMPARE WITH ACTUAL LENGTH        CLEAR34
0037 0   E0F3                  AND      H00FF      MASK UNWANTED BITS                CLEAR35
0038 01  4C180046              BZ       PUX1       ACTUAL = DEFINED                  CLEAR35
003A 00  74010000              MDM    L *-*,1      INCREASE ACTUAL LENGTH            CLEAR36
003B                    STAD   EQU      *-1                                         CLEAR36
003C 01  C480003B              LD     I STAD       GET 1ST WORD OF STACK             CLEAR37
003E 0   E0EC                  AND      H00FF      MASK TO GET ACTUAL LENGTH         CLEAR37
003F 0   80FB                  A        STAD       ADD STACK ADDRESS                 CLEAR38
0040 0   D002                  STO      ST+1       PUT IN STORE INSTRUCTION          CLEAR38
0041 0   C00A                  LD       T          GET ITEM                          CLEAR39
0042 00  D4000000       ST     STO    L *-*        STORE ITEM IN STACK               CLEAR39
0044 01  7401002C              MDM    L PUSH,1     SKIP OVER ERROR RETURN            CLEAR40
0046 00  65000000       PUX1   LDX    L1 *-*       RESTORE INDEX REGISTER 1          CLEAR40
0048 01  7401002C              MDM    L PUSH,1     COMPUTE RETURN ADDRESS            CLEAR41
004A 01  4C80002C              B      I PUSH       RETURN                            CLEAR41
004C 0   0000           T      DC       0          TEMPORARY                         CLEAR42
004E                           END                                                  CLEAR42

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   011 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                              CLEAR43

*DELETE                CLEAR                                                       CLEAR43
CART ID 0001   DB ADDR  3696   DB CNT   0006

*STORE       WS  UA  CLEAR                                                       CLEAR44
CART ID 0001   DB ADDR  3A20   DB CNT   0006

// EJECT
```

```
// ASM                                                                  GETC0005
*LIST                                                                   GETC0010
*SYSTEM SYMBOL TABLE                                                    GETC0015
                        * ROUTINE TO NEXT CHARACTER FROM INPUT LINE     GETC0020
                        * AND DETERMINE IT'S TYPE                       GETC0025
                        * TYPE IS PLACED IN FIXED LOCATION AND ALSO     GETC0030
                        * RETURNED IN THE ACC                           GETC0035
                        * + = ALPHABETIC                                GETC0040
                        * 0 = NUMERIC                                   GETC0045
                        * - = OTHER                                     GETC0050
0000     071630C0              ENT      GETC                           GETC0055
0000 0   0000           GETC   DC       *-*                            GETC0060
0001 00  C4800200              LD    I  LP        GET NEXT CHARACTER    GETC0065
0003 00  D4000201              STO   L  C         LEAVE IT IN 'C'       GETC0070
0005 0   9010                  S        K9        IS IT NUMERIC         GETC0075
0006 01  4C30000A              BP       TA        BRANCH IF NOT         GETC0080
0008 0   1010                  SLA      16        ZERO THE ACC          GETC0085
0009 0   7006                  B        TC        GO STORE TYPE + RETURN GETC0090
000A 0   900C           TA     S        K26       IS IT ALPHABETIC      GETC0095
000B 01  4C30000F              BP       TB        BRANCH IF NOT         GETC0100
000D 0   C00A                  LD       K1                              GETC0105
000E 0   7001                  B        TC        GO STORE TYPE + RETURN GETC0110
000F 0   C009           TB     LD       M1                              GETC0115
0010 00  D4000202       TC     STO   L  TYPE      STORE TYPE CODE       GETC0120
0012 00  74010200              MDM   L  LP.1                            GETC0125
0014 01  4C800000              B     I  GETC      AND RETURN            GETC0130
0016 0   0009           K9     DC       9                               GETC0135
0017 0   001A           K26    DC       26                              GETC0140
0018 0   0001           K1     DC       1                               GETC0145
0019 0   FFFF           M1     DC       -1                              GETC0150
001A                           END                                      GETC0155

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   034 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                  GETC0160

*DELETE                GETC                                             GETC0165
CART ID 0001    DB ADDR  3696    DB CNT    0003

*STORE       WS  UA  GETC                                               GETC0170
CART ID 0001    DB ADDR  3A26    DB CNT    0003

// EJECT
```

```
// ASM                                                                    ASYM0005
*LIST                                                                     ASYM0010
*SYSTEM SYMBOL TABLE                                                      ASYM0015
                        * SUBROUTINE TO ALLOCATE SPACE IN SYMBOL TABLE    ASYM0020
                        * RETURN -                                        ASYM0025
                        * ACC = ADDRESS OF BEGINNING OF ENTRY            ASYM0030
                        * EXT = IDENTIFIER FOR ELEMENT                   ASYM0035
                        *                                                 ASYM0040
0000     018A8500              ENT      ASYM                              ASYM0045
0000 0   0000          ASYM    DC       *-*                               ASYM0050
0001 0   691F                  STX    1 XR1+1                             ASYM0055
0002 00  65800209              LDX   I1 UAD                               ASYM0060
0004 0   C100                  LD     1 NXID                              ASYM0065
0005 0   D020                  STO      ID                                ASYM0070
0006 0   801D                  A        K1                                ASYM0075
0007 0   D100                  STO    1 NXID                              ASYM0080
0008 0   901E                  S        K256                              ASYM0085
0009 01  4C08000F              BNP      OK                                ASYM0090
000B 0   6127                  LDX    1 39                                ASYM0095
000C 30  02159640              CALL     BERR                              ASYM0100
000E 0   6038                  EXIT                                       ASYM0105
000F 0   C016          OK      LD       ID                                ASYM0110
0010 0   9017                  S        K63                               ASYM0115
0011 0   D014                  STO      ID                                ASYM0120
0012 0   1001                  SLA      1                                 ASYM0125
0013 0   8012                  A        ID                                ASYM0130
0014 0   1001                  SLA      1                                 ASYM0135
0015 0   D00F                  STO      T                                 ASYM0140
0016 0   C104                  LD     1 PGOL                              ASYM0145
0017 0   8011                  A        K6                                ASYM0150
0018 0   D104                  STO    1 PGOL                              ASYM0155
0019 0   C00C                  LD       ID                                ASYM0160
001A 0   800D                  A        K63                               ASYM0165
001B 0   18D0                  XCH                                        ASYM0170
001C 0   C103                  LD     1 PGO                               ASYM0175
001D 0   9007                  S        T                                 ASYM0180
001E 00  84000209              A      L UAD        ADD BASE ADDR OF USER AREA ASYM0185
0020 00  65000000      XR1     LDX   L1 *-*                               ASYM0190
0022 01  4C800000              B      I ASYM                              ASYM0195
0024 0   0001          K1      DC       1                                 ASYM0200
0025 0   0000          T       DC       0                                 ASYM0205
0026 0   0000          ID      DC       0                                 ASYM0210
0027 0   0100          K256    DC       256                               ASYM0215
0028 0   003F          K63     DC       63                                ASYM0220
0029 0   0006          K6      DC       6                                 ASYM0225
002A                           END                                        ASYM0230

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   035 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                    ASYM0235

*DELETE                ASYM                                              ASYM0240
CART ID 0001    DB ADDR  3696    DB CNT    0004

*STORE       WS  UA  ASYM                                                 ASYM0245
```

```
CART ID 0001    DB ADDR   3A29    DB CNT    0004

// EJECT
```

```
// ASM                                                                  SSRCH005
*LIST                                                                   SSRCH010
*SYSTEM SYMBOL TABLE                                                    SSRCH015
                        * SYMBOL TABLE SEARCH ROUTINE                   SSRCH020
                        * CALLING SEQUENCE -                            SSRCH025
                        *     CALL     SSRCH                            SSRCH030
                        *     DC       AREA       ADDRESS OF LOCS CONTAINING SSRCH035
                        *                         THE CONSTANT, LABEL OR SYMB SSRCH040
                        *     DC       N          CODE TO GIVE TYPE OF SEARCH SSRCH045
                        *                         0 = VARIABLE          SSRCH050
                        *                         1= CONSTANT           SSRCH055
                        *                         2 = STATEMENT NUMBER  SSRCH060
                        *                         3 = FUNCTION NAME     SSRCH065
                        *                                               SSRCH070
0000     228990C8               ENT      SSRCH                          SSRCH075
0000 0   0000           SSRCH  DC       *-*                             SSRCH080
0001 0   6926                  STX    1 XR1+1      SAVE XR1             SSRCH085
0002 0   6A27                  STX    2 XR2+1      SAVE XR2             SSRCH090
0003 00  65800209              LDX   I1 UAD        ADDRESS OF USER AREA SSRCH095
0005 0   C103                  LD     1 PG0        REL ADD OF PG0 OF SYMBOLS SSRCH100
0006 0   9104                  S      1 PGOL       LENGTH OF PAGE       SSRCH105
0007 00  84000209              A    L  UAD         TRUE ADDRESS OF SYMBOL TABL SSRCH110
0009 0   D05F                  STO      BPG0       ADDR OF LAST ENTRY   SSRCH115
000A 0   C104                  LD     1 PGOL       GET LENGTH           SSRCH120
000B 0   1890                  SRT      16         PREPARE FOR DIVIDE   SSRCH125
000C 0   A85B                  D        K6         DIVIDE TO GET NO OF SYMBOLS SSRCH130
000D 0   D05C                  STO      SCNT       SAVE SYMBOL COUNT    SSRCH135
000E 01  C4800000              LD    I  SSRCH      GET ADDRESS OF ITEM SEARCH SSRCH140
0010 0   D05A                  STO      SYMAD      SAVE IT              SSRCH145
0011 01  74010000              MDM   L  SSRCH,1    POINT TO SEARCH TYPE CODE SSRCH150
0013 01  C4800000              LD    I  SSRCH      GET CODE             SSRCH155
0015 0   D056                  STO      SCOD       SAVE IT              SSRCH160
0016 01  74010000              MDM   L  SSRCH,1    COMPUTE RETURN ADDRESS SSRCH165
                        * START SEARCH                                  SSRCH170
0018 01  65800069              LDX   I1 BPG0       POINT TO BOTTOM OF TABLE SSRCH175
001A 01  6680006C              LDX   I2 SCOD       SEARCH CODE          SSRCH180
001C 0   C101           SLP    LD     1 1          GET FLAGS            SSRCH185
001D 01  E600002D              AND   L2 FLAGS      CHECK IF PROPER TYPE SSRCH190
001F 01  4EA00031              BNZ   I2 CCMP       PROPER TYPE, COMPARE SSRCH195
0021 0   7106           INA    MDX    1 6          BUMP TO NEXT ENTRY   SSRCH200
0022 0   1000                  NOP                 IN CASE OF SKIP      SSRCH205
0023 01  74FF006A              MDM   L  SCNT,-1    DECREASE SYMBOL COUNT SSRCH210
0025 0   70F6                  B        SLP        GET ANOTHER IF THERE IS ONE SSRCH215
0026 0   C03F           INB    LD       M1         LOAD ERROR RETURN CODE SSRCH220
0027 00  65000000       XR1    LDX   L1 *-*        RESOTRE XR1          SSRCH225
0029 00  66000000       XR2    LDX   L2 *-*        RESTORE XR2          SSRCH230
002B 01  4C800000              B     I  SSRCH      RETURN               SSRCH235
                        * FLAG TABLE AND BRANCH TABLE                   SSRCH240
002D 0   0001           FLAGS  DC       /0001      VARIABLE             SSRCH245
002E 0   0002                  DC       /0002      CONSTANT             SSRCH250
002F 0   0004                  DC       /0004      STATEMENT NUMBER     SSRCH255
0030 0   0008                  DC       /0008      FUNCTION             SSRCH260
0031 1   0035           CCMP   DC       VARBL                           SSRCH265
0032 1   003B                  DC       CCNST                           SSRCH270
0033 1   004E                  DC       STNC                            SSRCH275
0034 1   0054                  DC       FCN                             SSRCH280
                        * COMPARE FOR VARIABLE                          SSRCH285
0035 01  C480006B       VARBL  LD    I  SYMAD      GET SYMBOL           SSRCH290
0037 0   F105                  ECR    1 SYM[illegible]  COMPARE WITH TABLE ENTRY SSRCH295
```

```
0038 01 4C200021          BNZ      INA       UNEQUAL, GO ON                SSRCH300
003A 0  7028              B        FOUND     FOUND IT, COMPUTE CODE        SSRCH305
                     *                       AND RETURN                    SSRCH310
                     * COMPARE FOR CONSTANT                                 SSRCH315
003B 0  6A10         CONST STX    2 CX2+1     SAVE XR2                      SSRCH320
003C 01 6680006B          LDX   I2 SYMAD     GET ADDR OF CONSTANT          SSRCH325
003E 0  C200              LD     2 0         GET 1ST WORD OF CONST         SSRCH330
003F 0  F102              EOR    1 CON       COMPARE WITH 1ST TABLE WD     SSRCH335
0040 01 4C20004B          BNZ      CX2       NOT EQUAL, SO BRANCH          SSRCH340
0042 0  C201              LD     2 1         GET 2ND CONST WORD            SSRCH345
0043 0  F103              EOR    1 CON+1     COMPARE WITH 2ND TABLE WD     SSRCH350
0044 01 4C20004B          BNZ      CX2       BRANCH IF NOT EQUAL           SSRCH355
0046 0  C202              LD     2 2         GET LAST CONST WORD           SSRCH360
0047 0  F104              EOR    1 CON+2     COMPARE WITH LAST TABLE WD    SSRCH365
0048 01 4C20004B          BNZ      CX2       BRANCH IF NOT EQUAL           SSRCH370
004A 0  7018              B        FOUND                                   SSRCH375
004B 00 66000000     CX2  LDX   L2 *-*       RESTORE XR2                   SSRCH380
004D 0  70D3              B        INA       CONTINUE SEARCH               SSRCH385
                     * STATEMENT NUMBER COMPARE                            SSRCH390
004E 01 C480006B     STNO LD    I  SYMAD     GET STATEMENT NO.             SSRCH395
0050 0  F102              EOR    1 CON       COMPARE                       SSRCH400
0051 01 4C200021          BNZ      INA       NOT EQUAL                     SSRCH405
0053 0  700F              B        FOUND     FOUND IT                      SSRCH410
                     * COMPARE FOR FUNCTION                                SSRCH415
0054 0  6A0C         FCN  STX    2 FX2+1     SAVE XR2                      SSRCH420
0055 01 6680006B          LDX   I2 SYMAD     GET ADDR OF FCN NAME          SSRCH425
0057 0  C200              LD     2 0         GET 1ST 2 CHARS OF NAME       SSRCH430
0058 0  F104              EOR    1 4         COMPARE WITH TABLE ENTRY      SSRCH435
0059 01 4C200060          BNZ      FX2       BRANCH IF NOT EQUAL           SSRCH440
005B 0  C201              LD     2 1                                       SSRCH445
005C 0  F105              EOR    1 5         COMPARE WITH TABLE            SSRCH450
005D 01 4C200060          BNZ      FX2       BRANCH IF NOT EQUAL           SSRCH455
005F 0  7003              B        FOUND     FOUND IT                      SSRCH460
0060 00 66000000     FX2  LDX   L2 *-*       RESTORE XR2                   SSRCH465
0062 0  70BE              B        INA       KEEP LOOKING                  SSRCH470
                     * FOUND ENTRY, COMPUTE ID AND RETURN                  SSRCH475
0063 0  C006         FOUND LD       SCNT      GET SYMBOL COUNT              SSRCH480
0064 0  8002              A        K63                                     SSRCH485
0065 0  70C1              B        XR1                                     SSRCH490
                     *                                                     SSRCH495
0066 0  FFFF         M1   DC       -1                                      SSRCH500
0067 0  003F         K63  DC       63                                      SSRCH505
0068 0  0006         K6   DC       6                                       SSRCH510
0069 0  0000         BPGO DC       0                                       SSRCH515
006A 0  0000         SCNT DC       0                                       SSRCH520
006B 0  0000         SYMAD DC      0                                       SSRCH525
006C 0  0000         SCCD DC       0                                       SSRCH530
006E                      END                                              SSRCH535

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   048 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                     SSRCH540

*DELETE              SSRCH                                                SSRCH545
CART ID 0001   DB ADDR  3696   DB CNT   0007
```

843

```
*STORE        WS  UA  SSRCH                                          SSRCH550
CART ID 0001    DB ADDR  3A2D    DB CNT    0007

// EJECT
```

```
// ASM                                                                GSYM0005
*LIST                                                                 GSYM0010
*SYSTEM SYMBOL TABLE                                                  GSYM0015
0000     078A8500            ENT      GSYM                            GSYM0020
0000 0   0000        GSYM    DC       *-*                             GSYM0025
0001 0   695B                STX    1 XR1+1     SAVE INDEX REG 1      GSYM0030
0002 01  C4800000            LD     I GSYM       GET PARAM ADDRESS     GSYM0035
0004 01  D4000058            STO    L GSTO+1     PUT INTO STORE INSTR  GSYM0040
0006 01  74010000            MDM    L GSYM,1     SPACE PAST ADDRESS    GSYM0045
0008 0   C05F                LD       BLANK      GET BLANK             GSYM0050
0009 0   D05F                STO      B          PUT INTO WORK AREA    GSYM0055
000A 0   D05F                STO      B+1                              GSYM0060
000B 0   D05F                STO      B+2                              GSYM0065
000C 00  C4000202            LD     L TYPE       GET TYPE OF CHAR UNDER SCAN GSYM0070
000E 01  4C08005C            BNP      XR1        ERROR IF NOT ALPHA    GSYM0075
0010 00  C4000201            LD     L C          GET CHARACTER         GSYM0080
0012 0   D056                STO      B          SAVE IT               GSYM0085
0013 30  071630C0            CALL     GETC       GET NEXT CHAR         GSYM0090
0015 01  4C30001F            BP       FN         CHECK FOR FCN IF LETTER GSYM0095
0017 01  4C28004F            BN       PACK       SINGLE CHAR VARIABLE  GSYM0100
0019 00  C4000201            LD     L C          GET DIGIT OF 2 CHAR VARBL GSYM0105
001B 0   D04E                STO      B+1                              GSYM0110
001C 30  071630C0            CALL     GETC       GET NEXT CHAR         GSYM0115
001E 0   7030                B        PACK       PACK AND RETURN       GSYM0120
                     *                                                 GSYM0125
001F 00  C4000201    FN      LD     L C          GET CHAR              GSYM0130
0021 0   D048                STO      B+1        SAVE IT               GSYM0135
0022 30  071630C0            CALL     GETC       GET NEXT CHAR         GSYM0140
0024 01  4C08005C            BNP      XR1        TWO LETTERS AND NON-LETTR GSYM0145
0026 00  C4000201            LD     L C          GET THIRD LETTER      GSYM0150
0028 0   D042                STO      B+2        SAVE IT               GSYM0155
0029 0   1008                SLA      8          ALSO POSITION AND     GSYM0160
002A 0   D042                STO      FTWO+1     SAVE FOR COMPARING    GSYM0165
002B 30  071630C0            CALL     GETC       GET NEXT CHAR         GSYM0170
002D 0   C03B                LD       B          PACK 1ST TWO CHARS    GSYM0175
002E 0   1008                SLA      8                                GSYM0180
002F 0   E83A                OR       B+1                              GSYM0185
0030 0   D03B                STO      FTWO       SAVE PACKED CHARS     GSYM0190
0031 0   900E                S        FNCON      ARE THEY 'FN'         GSYM0195
0032 01  4C180046            BZ       UFN        YES, USER FUNCTION    GSYM0200
                     * BEGIN SEARCH FOR LIBRARY FUNCTION               GSYM0205
0034 0   6130                LDX    1 NFN*4      SEARCH FUNCTION TABLE GSYM0210
0035 01  CD000070    FLP     LDD   L1 FTAB-2     GET FCN NAME          GSYM0215
0037 0   9834                SD       FTWO       COMPARE               GSYM0220
0038 01  4C20003D            BNZ      MORE       NOT SAME              GSYM0225
003A 0   18D0                XCH                                      GSYM0230
003B 01  4C180041            BZ       FNDIT      FOUND IT              GSYM0235
003D 0   71FC        MORE    MDX    1 -4         MOVE TO NEXT ENTRY    GSYM0240
003E 0   70F6                B        FLP        TRY AGAIN             GSYM0245
003F 0   7020                B        VAR1       NOT FCN, SO TRY 1 CHAR VAR GSYM0250
0040 0   0F17        FNCON   DC       /0F17      'FN'                  GSYM0255
0041 01  CD00006E    FNDIT   LDD   L1 FTAB-4     GET FCN NO. AND PAR CT GSYM0260
0043 01  74010000            MDM    L GSYM,1     GIVE FCN RETURN       GSYM0265
0045 0   7009                B        PACK       PACK NAME AND RETURN  GSYM0270
                     * USER FUNCTION                                   GSYM0275
0046 0   C024        UFN     LD       B+2        IS IT 'FNE'           GSYM0280
0047 0   9006                S        ECON                             GSYM0285
0048 01  4C180060            BZ       VAR1       YES, SO RETURN VAR 'F' GSYM0290
004A 0   C823                LDD      UFCN                             GSYM0295
```

```
004B 01 74020000          MDM  L  GSYM,2    GIVE USER FCN RETURN          GSYM0300
004D 0  7001              B       PACK      PACK NAME AND RETURN          GSYM0305
004E 0  000E        ECON  DC      /E        LETTER 'E'                    GSYM0310
                    *                                                     GSYM0315
004F 0  D820        PACK  STD     DSV       SAVE ACC AND EXT              GSYM0320
0050 0  C018              LD      B         PACK NAME                     GSYM0325
0051 0  1008              SLA     8                                       GSYM0330
0052 0  E817              OR      B+1                                     GSYM0335
0053 0  18D0              XCH                                             GSYM0340
0054 0  C016              LD      B+2                                     GSYM0345
0055 0  1008              SLA     8                                       GSYM0350
0056 0  18D0              XCH                                             GSYM0355
0057 00 DC000000    GSTO  STD  L  *-*       STORE TO CALLING PGM          GSYM0360
0059 0  C816              LDD     DSV       RESTORE ACC AND EXT           GSYM0365
005A 01 74010000          MDM  L  GSYM,1    COMPUTE RETURN ADDRESS        GSYM0370
005C 00 65000000    XR1   LDX  L1 *-*       RESTORE XR1                   GSYM0375
005E 01 4C800000          B    I  GSYM      RETURN                        GSYM0380
                    *                                                     GSYM0385
0060 0  C007        VAR1  LD      BLANK     BLANK OUT                     GSYM0390
0061 0  D008              STO     B+1       TWO CHARS                     GSYM0395
0062 0  D008              STO     B+2                                     GSYM0400
0063 00 74FD0200          MDM  L  LP,-3     BACK UP INPUT                 GSYM0405
0065 30 071630C0          CALL    GETC      READ CHAR                     GSYM0410
0067 0  70E7              B       PACK      PACK NAME AND RETURN          GSYM0415
                    *                                                     GSYM0420
0068 0  0030        BLANK DC      /30       BLANK                         GSYM0425
0069    0003        B     BSS     3         WORK AREA                     GSYM0430
006C    0002        FTWO  BSS  E  2         ANOTHER WORK AREA             GSYM0435
006E 0  0000        UFCN  DC   E  0         FCN NO.                       GSYM0440
006F 0  FFFF              DC      -1        UNDEF PAR CT                  GSYM0445
0070    0002        DSV   BSS  E  2         ANOTHER WORK AREA             GSYM0450
                    * LIBRARY FUNCTION TABLE                              GSYM0455
0072    0000        FTAB  BSS  E  0                                       GSYM0460
0072 0  0001              DC      1         FUNCTION NO.                  GSYM0465
0073 0  0000              DC      0         NO. OF ARGS                   GSYM0470
0074 0  1B17              DC      /1B17     'RN' = FUNCTION NAME          GSYM0475
0075 0  0D00              DC      /0D00     'D' = LAST PART OF NAME       GSYM0480
                    * RND                                                 GSYM0485
                    * INT                                                 GSYM0490
0076 0  0002              DC      2                                       GSYM0495
0077 0  0001              DC      1                                       GSYM0500
0078 0  1217              DC      /1217     'IN'                          GSYM0505
0079 0  1D00              DC      /1D00     'T'                           GSYM0510
                    * SGN                                                 GSYM0515
007A 0  0003              DC      3                                       GSYM0520
007B 0  0001              DC      1                                       GSYM0525
007C 0  1C10              DC      /1C10     'SG'                          GSYM0530
007D 0  1700              DC      /1700     'N'                           GSYM0535
                    * SIN                                                 GSYM0540
007E 0  0004              DC      4                                       GSYM0545
007F 0  0001              DC      1                                       GSYM0550
0080 0  1C12              DC      /1C12     'SI'                          GSYM0555
0081 0  1700              DC      /1700     'N'                           GSYM0560
                    * COS                                                 GSYM0565
0082 0  0005              DC      5                                       GSYM0570
0083 0  0001              DC      1                                       GSYM0575
0084 0  0C18              DC      /0C18     'CO'                          GSYM0580
0085 0  1C00              DC      /1C00     'S'                           GSYM0585
                    * TAN                                                 GSYM0590
```

```
0086 0  0006                DC      6                                   GSYM0595
0087 0  0001                DC      1                                   GSYM0600
0088 0  1D0A                DC      /1D0A     'TA'                      GSYM0605
0089 0  1700                DC      /1700     'N'                       GSYM0610
                    * COT                                               GSYM0615
008A 0  0007                DC      7                                   GSYM0620
008B 0  0001                DC      1                                   GSYM0625
008C 0  0C18                DC      /0C18     'CO'                      GSYM0630
008D 0  1D00                DC      /1D00     'T'                       GSYM0635
                    * ATN                                               GSYM0640
008E 0  0008                DC      8                                   GSYM0645
008F 0  0001                DC      1                                   GSYM0650
0090 0  0A1D                DC      /0A1D     'AT'                      GSYM0655
0091 0  1700                DC      /1700     'N'                       GSYM0660
                    * EXP                                               GSYM0665
0092 0  0009                DC      9                                   GSYM0670
0093 0  0001                DC      1                                   GSYM0675
0094 0  0E21                DC      /0E21     'EX'                      GSYM0680
0095 0  1900                DC      /1900     'P'                       GSYM0685
                    * LOG                                               GSYM0690
0096 0  000A                DC      10                                  GSYM0695
0097 0  0001                DC      1                                   GSYM0700
0098 0  1518                DC      /1518     'LO'                      GSYM0705
0099 0  1000                DC      /1000     'G'                       GSYM0710
                    * ABS                                               GSYM0715
009A 0  000B                DC      11                                  GSYM0720
009B 0  0001                DC      1                                   GSYM0725
009C 0  0A0B                DC      /0A0B     'AB'                      GSYM0730
009D 0  1C00                DC      /1C00     'S'                       GSYM0735
                    * SQR                                               GSYM0740
009E 0  000C                DC      12                                  GSYM0745
009F 0  0001                DC      1                                   GSYM0750
00A0 0  1C1A                DC      /1C1A     'SQ'                      GSYM0755
00A1 0  1B00                DC      /1B00     'R'                       GSYM0760
000C                NFN     EQU     12        NUMBER OF LIBRARY FCNS    GSYM0765
00A2                        END                                         GSYM0770

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   045 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                  GSYM0775

*DELETE             GSYM                                                GSYM0780
CART ID 0001   DB ADDR  3696   DB CNT   000A

*STORE      WS  UA  GSYM                                                GSYM0785
CART ID 0001   DB ADDR  3A24   DB CNT   000A

// EJECT
```

```
// ASM                                                                  GSYMA005
*LIST                                                                   GSYMA010
*SYSTEM SYMBOL TABLE                                                    GSYMA015
0000     078A8501            ENT      GSYMA                             GSYMA020
0000 0   0000        GSYMA   DC       *-*                               GSYMA025
0001 0   6910                STX    1 GS1+1     SAVE INDEX REGISTER 1    GSYMA030
0002 30  078A8500            CALL     GSYM      PICK UP SYMBOL FROM INPUT GSYMA035
0004 1   004C                DC       ACQ       SYMBOL STORED HERE       GSYMA040
0005 0   700B                B        ERR       ERROR RETURN             GSYMA045
0006 0   7002                B        VAR       VARIABLE                 GSYMA050
0007 0   701E                B        LFN       LIBRARY FUNCTION         GSYMA055
0008 0   701F                B        UFN       USER FUNCTION            GSYMA060
                     *                                                   GSYMA065
0009 01  74010000    VAR     MDM  L   GSYMA,1   VARIABLE RETURN          GSYMA070
000B 30  228990C8            CALL     SSRCH     SEARCH SYMBOL TABLE FOR VAR GSYMA075
000D 1   004C                DC       ACQ                                GSYMA080
000E 0   0000                DC       0                                  GSYMA085
000F 01  4C280015            BN       VAR5      BRANCH IF NOT IN TABLE   GSYMA090
0011 00  65000000    GS1     LDX  L1  *-*       RESTORE XR1              GSYMA095
0013 01  4C800000            B    I   GSYMA      RETURN                   GSYMA100
                     *                                                   GSYMA105
0015 30  018A8500    VAR5    CALL     ASYM      GET SPACE IN SYMBOL TABLE GSYMA110
0017 0   D033                STO      T         SAVE ADDRESS OF SPACE    GSYMA115
0018 01  6580004B            LDX  I1  T         ADDRESS TO XR1           GSYMA120
001A 0   C00A                LD       K1        SET VARIABLE FLAG        GSYMA125
001B 0   D101                STO    1 1                                 GSYMA130
001C 0   1810                SRA      16        ZERO                     GSYMA135
001D 0   D100                STO    1 0         MISC FLAGS               GSYMA140
001E 0   D102                STO    1 2         AND VALUE                GSYMA145
001F 0   D103                STO    1 3                                 GSYMA150
0020 0   D104                STO    1 4                                 GSYMA155
0021 0   C02A                LD       ACQ       PUT SYMBOL IN TABLE      GSYMA160
0022 0   D105                STO    1 5                                 GSYMA165
0023 0   18D0                XCH                ELEMENT ID TO ACC        GSYMA170
0024 0   70EC                B        GS1       RETURN                   GSYMA175
0025 0   0001        K1      DC       1         VARIABLE FLAG            GSYMA180
                     *                                                   GSYMA185
0026 0   6108        LFN     LDX    1 8         LIBRARY FCN FLAG         GSYMA190
0027 0   7001                B        *+1                                GSYMA195
0028 0   6118        UFN     LDX    1 24        USER FCN FLAG            GSYMA200
0029 0   6920                STX    1 FTYP      SAVE FLAG                GSYMA205
002A 01  74020000            MDM  L   GSYMA,2   GIVE FUNCTION RETURN     GSYMA210
002C 0   D81B                STD      FNO       SAVE RETURN FROM GSYM    GSYMA215
002D 30  228990C8            CALL     SSRCH     SEARCH TABLE FOR FUNCTION GSYMA220
002F 1   004C                DC       ACQ                                GSYMA225
0030 0   0003                DC       3                                  GSYMA230
0031 01  4C280034            BN       FN5       BRANCH IF NOT IN TABLE   GSYMA235
0033 0   70DD                B        GS1       RETURN                   GSYMA240
                     *                                                   GSYMA245
0034 30  018A8500    FN5     CALL     ASYM      GET SPACE IN SYMBOL TABLE GSYMA250
0036 0   D014                STO      T         SAVE ADDRESS             GSYMA255
0037 01  6580004B            LDX  I1  T         ADDRESS TO XR1           GSYMA260
0039 0   C010                LD       FTYP      GET FUNCTION FLAG        GSYMA265
003A 0   D101                STO    1 1         STORE IN FLAG WORD       GSYMA270
003B 0   1810                SRA      16        ZERO                     GSYMA275
003C 0   D100                STO    1 0         MISC FLAGS               GSYMA280
003D 0   C00A                LD       FNO       GET FUNCTION NO.         GSYMA285
003E 0   D102                STO    1 2                                 GSYMA290
003F 0   C009                LD       FNO+1     GET NO. OF ARGS          GSYMA295
```

```
0040 0  D103                STO    1 3                                    GSYMA300
0041 0  C00A                LD       ACQ       PUT FCN NAME IN TABLE      GSYMA305
0042 0  D104                STO    1 4                                    GSYMA310
0043 0  C009                LD       ACQ+1                                GSYMA315
0044 0  D105                STO    1 5                                    GSYMA320
0045 0  18D0                XCH                ELEMENT ID TO ACC          GSYMA325
0046 0  70CA                B        GS1       RETURN                     GSYMA330
0048    0002        FNC     BSS  E   2         SAVE AREA                  GSYMA335
004A 0  0000        FTYP    DC       0         SAVE FCN FLAG              GSYMA340
004B    0001        T       BSS      1                                    GSYMA345
0011                ERR     EQU      GS1                                  GSYMA350
004C    0002        ACQ     BSS  E   2                                    GSYMA355
004E                        END                                           GSYMA360

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   039 SYMBOLS DEFINED
    NO ERROR(S) FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                    GSYMA365

*DELETE              GSYMA                                               GSYMA370
CART ID 0001   DB ADDR  3696   DB CNT   0005

*STORE       WS  UA  GSYMA                                               GSYMA375
CART ID 0001   DB ADDR  3A2E   DB CNT   0005

// EJECT
```

```
// ASM                                                                    ASR0000
*LIST                                                                     ASR0001
*SYSTEM SYMBOL TABLE                                                      ASR0001
                        * ROUTINE TO ALLOCATE SPACE FOR STMNT RECORD      ASR0002
0000     01899000             ENT      ASR                                ASR0002
0000 0   0000         ASR     DC       *-*                                ASR0003
0001 0   D024                 STO      STYP                               ASR0003
0002 0   6920                 STX    1 XR1+1                              ASR0004
0003 00  65800209             LDX   I1 UAD                                ASR0004
0005 0   C101                 LD     1 ST                                 ASR0005
0006 0   8102                 A      1 STL                                ASR0005
0007 00  84000209             A     L  UAD                                ASR0006
0009 00  D4000206             STO   L  SREC      BASE ADDRESS OF THIS RECORD ASR0006
000B 00  65800206             LDX   I1 SREC                               ASR0007
000D 0   C019                 LD       CLASS     RECORD TYPE TO WORD 0    ASR0007
000E 0   D100                 STO    1 0                                  ASR0008
000F 0   C016                 LD       STYP                               ASR0008
0010 0   1008                 SLA      8                                  ASR0009
0011 0   D101                 STO    1 1         PUT IN STATEMENT TYPE    ASR0009
0012 0   1810                 SRA      16                                 ASR0010
0013 00  940001FF             S     L  LNINC     IS INCREMENT ZERO        ASR0010
0015 01  4C280019             BN       *+2       NO, SO STORE INCR        ASR0011
0017 00  C40001FE             LD    L  LNUM      YES, SO STORE LINE NO.   ASR0011
0019 0   D102                 STO    1 2         PUT IN LINE NUMBER       ASR0012
001A 0   6103                 LDX    1 3                                  ASR0012
001B 00  6D000207             STX   L1 LREC      INITIALIZE LENGTH TO 3   ASR0013
001D 00  74030206             MDM   L  SREC,3    SET POINTER              ASR0013
001F 0   1810                 SRA      16        CLEAR THE LEFT-RIGHT     ASR0014
0020 00  D4000208             STO   L  LFRT      INDICATOR TO LEFT        ASR0014
0022 00  65000000     XR1     LDX   L1 *-*       RESTORE XR1              ASR0015
0024 01  4C800000             B     I  ASR       RETURN                   ASR0015
0026 0   0000         STYP    DC       0                                  ASR0016
0027 0   0000         CLASS   DC       0                                  ASR0016
0028                          END                                         ASR0017

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   030 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                    ASR0017

*DELETE              ASR                                                  ASR0018
CART ID 0001   DB ADDR  3696   DB CNT   0004

*STORE       WS  UA  ASR                                                  ASR0018
CART ID 0001   DB ADDR  3A23   DB CNT   0004

// EJECT
```

```
// ASM
*LIST                                                                   TSR00005
*SYSTEM SYMBOL TABLE                                                    TSR00010
                        * ROUTINE TO TERMINATE STATEMENT RECORD         TSR00015
0000     23899000               ENT      TSR                            TSR00020
0000 0   0000           TSR    DC       *-*                            TSR00025
0001 0   6929                   STX    1 XR1+1                          TSR00030
0002 00  65800209               LDX   I1 UAD                            TSR00035
0004 0   C101                   LD     1 ST                             TSR00040
0005 0   8102                   A      1 STL                            TSR00045
0006 00  84000209               A     L  UAD                            TSR00050
0008 0   D00D                   STO      B1                             TSR00055
0009 00  84000207               A     L  LREC                           TSR00060
000B 0   D00B                   STO      B2                             TSR00065
000C 01  65800016               LDX   I1 B1                             TSR00070
000E 0   C101                   LD     1 1                              TSR00075
000F 00  EC000207               CR    L  LREC                           TSR00080
0011 0   D101                   STO    1 1          SET LENGTH OF RECORD TSR00085
0012 00  74000203               MDM   L  DBUG       CHECK IF DEBUGGING  TSR00090
0014 0   7003                   B        ZIP         NO                 TSR00095
0015 0   7002                   B        ZIP         NO DUMP FOR NOW    TSR00100
0016 0   0000           B1     DC       0                               TSR00105
0017 0   0000           B2     DC       0                               TSR00110
0018 00  65800209       ZIP    LDX   I1 UAD                            TSR00115
001A 0   C102                   LD     1 STL                            TSR00120
001B 00  84000207               A     L  LREC                           TSR00125
001D 0   D102                   STO    1 STL        UPDATE TOTAL LNGTH OF STMNT TSR00130
001E 0   C101                   LD     1 ST         TEST FOR OVERLAP WITH STAB TSR00135
001F 0   8102                   A      1 STL                            TSR00140
0020 0   D00D                   STO      T                              TSR00145
0021 0   C103                   LD     1 PGO                            TSR00150
0022 0   9104                   S      1 PGOL                           TSR00155
0023 0   900A                   S        T                              TSR00160
0024 01  4C30002A               BP       XR1                            TSR00165
0026 0   6128                   LDX    1 40         FATAL ERROR - OVERLAP TSR00170
0027 30  02159640               CALL     BERR                           TSR00175
0029 0   6038                   EXIT                                    TSR00180
002A 00  65000000       XR1    LDX   L1 *-*         RESTORE XR1        TSR00185
002C 01  4C800000               B     I  TSR                            TSR00190
002E 0   0000           T      DC       0                               TSR00195
0030                            END                                      TSR00200
                                                                         TSR00205

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   032 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP
                                                                         TSR00210
*DELETE                TSR
CART ID 0001   DB ADDR  3696   DB CNT   0004                             TSR00215

*STORE       WS  UA  TSR
CART ID 0001   DB ADDR  3A27   DB CNT   0004                             TSR00220

// EJECT
```

```
// ASM                                                                  MAP00005
*LIST                                                                   MAP00010
*SYSTEM SYMBOL TABLE                                                    MAP00015
                        *                                               MAP00020
                        *     MAPPING FUNCTION TO CONVERT FROM          MAP00025
                        *     ELEMENT ID TO SYMBOL TABLE ADDRESS        MAP00030
                        *     INPUT AND OUTPUT IN ACC                   MAP00035
                        *                                               MAP00040
0000     14057000               ENT      MAP                            MAP00045
0000 0   0000           MAP    DC       *-*                            MAP00050
0001 0   690F                   STX    1 MPX1+1                         MAP00055
0002 0   9012                   S        MK63                           MAP00060
0003 01  4C080016               BNP      MERR                           MAP00065
0005 0   D00E                   STO      MTM                            MAP00070
0006 0   1001                   SLA      1                              MAP00075
0007 0   800C                   A        MTM                            MAP00080
0008 0   1001                   SLA      1                              MAP00085
0009 0   D00A                   STO      MTM                            MAP00090
000A 00  65800209               LDX   I1 UAD                            MAP00095
000C 0   C103                   LD     1 PG0                            MAP00100
000D 0   9006                   S        MTM                            MAP00105
000E 00  84000209               A     L  UAD                            MAP00110
0010 00  65000000       MPX1    LDX   L1 *-*                            MAP00115
0012 01  4C800000               B     I  MAP                            MAP00120
0014 0   0000           MTM    DC       0                              MAP00125
0015 0   003F           MK63   DC       63                             MAP00130
0016 0   6118           MERR   LDX    1 24                             MAP00135
0017 30  02159640               CALL     BERR                           MAP00140
0019 0   6038                   EXIT                                    MAP00145
001A                            END                                     MAP00150

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   031 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                  MAP00155

*DELETE                 MAP                                             MAP00160
CART ID 0001    DB ADDR  3696    DB CNT    0003

*STORE       WS  UA  MAP                                                MAP00165
CART ID 0001    DB ADDR  3A2B    DB CNT    0003

// EJECT
```

```
// ASM                                                                  GLN00005
*LIST                                                                   GLN00010
*SYSTEM SYMBOL TABLE                                                    GLN00015
                        * LINE NUMBER CONVERSION SUBROUTINE             GLN00020
                        * CALL GLN (WITH 1ST CHAR OF LINE NUMBER UNDER SCAN GLN00025
                        *                                               GLN00030
0000     074D5000              ENT      GLN                             GLN00035
0000 0   0000          GLN     DC       *-*       ENTRY POINT           GLN00040
0001 0   6929                  STX    1 XR1+1     SAVE INDEX REGISTER 1 GLN00045
0002 00  C4000202              LD     L TYPE      GET CHARACTER TYPE    GLN00050
0004 01  4C20001E              BNZ      NLN       BRANCH IF NOT NUMERIC GLN00055
0006 00  C4000201              LD     L C         GET THE DIGIT         GLN00060
0008 0   D035                  STO      N         INITIALIZE N WITH 1ST DIGIT GLN00065
0009 0   6104                  LDX    1 4         MAX NUMBER OF DIGITS  GLN00070
000A 30  071630C0      LN1     CALL     GETC      GET NEXT CHAR         GLN00075
000C 01  4C200019              BNZ      LN2       BRANCH IF NOT DIGIT   GLN00080
000E 0   C02F                  LD       N         GET N AND             GLN00085
000F 0   1002                  SLA      2         MULTIPLY BY 10        GLN00090
0010 0   802D                  A        N                               GLN00095
0011 0   1001                  SLA      1                               GLN00100
0012 00  84000201              A      L C         THEN ADD NEW DIGIT    GLN00105
0014 0   D029                  STO      N         AND SAVE RESULT       GLN00110
0015 0   71FF                  MDX    1 -1        COUNT DIGIT           GLN00115
0016 0   70F3                  B        LN1       GO 'ROUND AGAIN       GLN00120
0017 0   6125                  LDX    1 37        TOO MANY DIGITS       GLN00125
0018 0   7006                  B        LNER                            GLN00130
0019 0   C024          LN2     LD       N         GET LINE NUMBER       GLN00135
001A 01  4C300022              BP       LOOK      PUT IN TBL IF +       GLN00140
001C 0   6125                  LDX    1 37        ZERO IS ILLEGAL       GLN00145
001D 0   7001                  B        LNER                            GLN00150
001E 0   6126          NLN     LDX    1 38        NON-DIGIT IS 1ST CHAR GLN00155
001F 30  02159640      LNER    CALL     BERR                            GLN00160
0021 0   7008                  B        XR1                             GLN00165
0022 01  74010000      LOOK    MDM    L GLN,1      GIVE NORMAL RETURN    GLN00170
0024 30  228990C8              CALL     SSRCH                           GLN00175
0026 1   003E                  DC       N                               GLN00180
0027 0   0002                  DC       2                               GLN00185
0028 01  4C28002F              BN       STO       NOT IN TBL, PUT IT IN GLN00190
002A 00  65000000      XR1     LDX   L1 *-*       RESTORE XR1           GLN00195
002C 01  4C800000              B     I  GLN       RETURN TO CALLING PROGRAM GLN00200
002E 30  018A8500      STO     CALL     ASYM      GET SPACE IN SYM TABLE GLN00205
0030 0   D00E                  STO      DT                              GLN00210
0031 01  6580003F              LDX   I1 DT                              GLN00215
0033 0   C00C                  LD       LFLAG                           GLN00220
0034 0   D101                  STO    1 1                               GLN00225
0035 0   1810                  SRA      16                              GLN00230
0036 0   D100                  STO    1 0                               GLN00235
0037 0   D103                  STO    1 3                               GLN00240
0038 0   D104                  STO    1 4                               GLN00245
0039 0   D105                  STO    1 5                               GLN00250
003A 0   C003                  LD       N                               GLN00255
003B 0   D102                  STO    1 CON                             GLN00260
003C 0   18D0                  XCH                                      GLN00265
003D 0   70EC                  B        XR1                             GLN00270
003E 0   0000          N       DC       0                               GLN00275
003F 0   0000          DT      DC       0                               GLN00280
0040 0   0004          LFLAG   DC       4                               GLN00285
0042                           END                                      GLN00290
```

```
   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   037 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                  GLN00295

*DELETE              GLN                                               GLN00300
CART ID 0001   DB ADDR  3696   DB CNT   0005

*STORE       WS  UA  GLN                                               GLN00305
CART ID 0001   DB ADDR  3A2E   DB CNT   0005

// EJECT
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```
// ASM                                                                  GCON0005
*LIST                                                                   GCON0010
*SYSTEM SYMBOL TABLE                                                    GCON0015
                        * CONSTANT CONVERSION ROUTINE                   GCON0020
                        * CALL GCON WITH 1ST CHAR OF CONSTANT UNDER SCAN GCON0025
                        * RETURN WITH ZERO ACC AND CONSTANT IN FAC      GCON0030
                        * OR NEGATIVE ACC IF ERROR IN CONSTANT          GCON0035
0000     070D6540             ENT      GCON                             GCON0040
0000 0   0000           GCON  DC       *-*        ENTRY POINT           GCON0045
0001 0   1810                 SRA      16         ZERO THE ACC          GCON0050
0002 0   D37A                 STO    3 122        TURN OFF ERROR INDICATOR GCON0055
0003 0   D044                 STO      ND         INITIALIZE            GCON0060
0004 0   D046                 STO      EXP                              GCON0065
0005 0   D044                 STO      TSGN       SET SIGN OF NUM = +   GCON0070
0006 0   6842                 STX      SGN        SGN NOT ZERO          GCON0075
0007 00  C4000202             LD     L TYPE       GET CHARACTER TYPE    GCON0080
0009 01  4C200024             BNZ      GC4        BRANCH IF NON-NUMERIC GCON0085
000B 00  C4000201       GC0   LD     L C          GET DIGIT             GCON0090
000D 20  064D6063             LIBF     FLOAT      FLOAT IT TO FAC       GCON0095
000E 30  071630C0       GC1   CALL     GETC       GET NEXT CHAR         GCON0100
0010 01  4C200015             BNZ      GC2        BRANCH IF NOT DIGIT   GCON0105
0012 01  44000097             BSI    L ML10       ACCUMULATE            GCON0110
0014 0   70F9                 B        GC1        GO AGAIN              GCON0115
                        *                                               GCON0120
0015 01  4C300051       GC2   BP       GC5        GO TEST FOR E         GCON0125
0017 00  C4000201             LD     L C          GET CHARACTER         GCON0130
0019 0   F032                 EOR      PER        TEST FOR PERIOD       GCON0135
001A 01  4C200076             BNZ      GC9        NO, SO QUIT           GCON0140
                        *                                               GCON0145
001C 30  071630C0       GC3   CALL     GETC       GET NEXT CHAR         GCON0150
001E 01  4C200051             BNZ      GC5        TEST FOR E IF NON-NUMERIC GCON0155
0020 0   4076                 BSI      ML10       ACCUMULATE            GCON0160
0021 01  74010048             MDM    L ND,1       COUNT DIGITS AFTER .  GCON0165
0023 0   70F8                 B        GC3        GO AGAIN              GCON0170
                        *                                               GCON0175
0024 01  4C100093       GC4   BNN      ERR        1ST CHAR ALPHABETIC   GCON0180
0026 00  C4000201             LD     L C          GET CHAR              GCON0185
0028 0   9025                 S        MCOD       COMPARE WITH -        GCON0190
0029 01  4C300033             BP       GC4B       GO TEST FOR .         GCON0195
002B 0   8023                 A        K1         ADJUST SO +==0 AND -=1 GCON0200
002C 0   D01D                 STO      TSGN       SET SIGN              GCON0205
002D 30  071630C0             CALL     GETC       GET NEXT CHARACTER    GCON0210
002F 01  4C18000B             BZ       GC0        BRANCH IF DIGIT       GCON0215
0031 01  4C300093             BP       ERR        ERROR IF ALPHABETIC   GCON0220
0033 00  C4000201       GC4B  LD     L C          GET CHARACTER         GCON0225
0035 0   F016                 EOR      PER        CHECK FOR .           GCON0230
0036 01  4C200093             BNZ      ERR        1ST CHAR NOT . OR DIGIT GCON0235
0038 30  071630C0             CALL     GETC       GET NEXT CHAR         GCON0240
003A 01  4C200093             BNZ      ERR        NO DIGIT AFTER INITIAL . GCON0245
003C 00  C4000201             LD     L C          GET DIGIT             GCON0250
003E 20  064D6063             LIBF     FLOAT      FLOAT IT TO FAC       GCON0255
003F 01  74010048             MDM    L ND,1       COUNT DIGITS AFTER .  GCON0260
0041 0   70DA                 B        GC3        TRY FOR ANOTHER DIGIT GCON0265
                        *                                               GCON0270
                        * CONSTANTS AND STORAGE AREAS                   GCON0275
0042 84  50000000       E10   XFLC     10.                              GCON0280
0045     0003           ET    BSS      3                                GCON0285
0048 0   0000           ND    DC       0                                GCON0290
0049 0   0000           SGN   DC       0          0=-, NON-ZERO=+       GCON0295
```

```
004A 0  0000          TSGN  DC      0          0=+, 1=-                    GCON0300
004B 0  0000          EXP   DC      0                                      GCON0305
004C 0  002B          PER   DC      /2B                                    GCON0310
004D 0  000E          ECOD  DC      /0E                                    GCON0315
004E 0  0025          MCOD  DC      /25        CODE FOR -                  GCON0320
004F 0  0001          K1    DC      1                                      GCON0325
0050 0  FFFF          M1    DC      -1                                     GCON0330
                      *                                                    GCON0335
0051 00 C4000201      GC5   LD    L C          GET CHARACTER               GCON0340
0053 0  F0F9                EOR     ECOD       IS IT 'E'                   GCON0345
0054 01 4C200076            BNZ     GC9        NO, SO QUIT                 GCON0350
0056 30 071630C0            CALL    GETC       GET NEXT CHARACTER          GCON0355
0058 01 4C300072            BP      GC8        BACK UP AND EXIT IF ALPHA   GCON0360
005A 01 4C180066            BZ      GC7        BRANCH IF DIGIT             GCON0365
005C 00 C4000201            LD    L C          GET CHARACTER               GCON0370
005E 0  90EF                S       MCOD                                   GCON0375
005F 01 4C300072            BP      GC8        BRANCH IF NOT + OR -        GCON0380
0061 0  D0E7                STO     SGN        SET EXPONENT SIGN           GCON0385
0062 30 071630C0      GC6   CALL    GETC       GET NEXT CHAR               GCON0390
0064 01 4C200093            BNZ     ERR        NO DIGIT AFTER 'E+' OR 'E-' GCON0395
0066 0  C0E4          GC7   LD      EXP                                    GCON0400
0067 0  1002                SLA     2          GET VALUE OF EXPONENT       GCON0405
0068 0  80E2                A       EXP                                    GCON0410
0069 0  1001                SLA     1                                      GCON0415
006A 00 84000201            A     L C                                      GCON0420
006C 0  D0DE                STO     EXP                                    GCON0425
006D 30 071630C0            CALL    GETC       GET NEXT CHAR               GCON0430
006F 01 4C180066            BZ      GC7        DIGIT, SO ACCUMULATE        GCON0435
0071 0  7004                B       GC9        NO DIGIT, SO QUIT           GCON0440
                      *                                                    GCON0445
0072 00 74FE0200      GC8   MDM   L LP,-2      BACK UP INPUT TO E          GCON0450
0074 30 071630C0            CALL    GETC       GET THE 'E'                 GCON0455
                      * EXIT SEQUENCE - MANTISSA IN FAC UPON ENTRY HERE    GCON0460
0076 0  1810          GC9   SRA     16                                     GCON0465
0077 0  90D3                S       EXP                                    GCON0470
0078 01 74000049            MDM   L SGN,0      SKIP IF NEG EXPONENT        GCON0475
007A 0  C0D0                LD      EXP                                    GCON0480
007B 0  90CC                S       ND         DIGITS AFTER DEC PT         GCON0485
007C 0  D0CE                STO     EXP        PROPER FACTOR OF 10         GCON0490
007D 0  C37A                LD    3 122        CHECK FOR OVER- OR UNDERFLOWGCON0495
007E 01 4C200093            BNZ     ERR                                    GCON0500
0080 20 058A3580            LIBF    ESTO       SAVE MANTISSA               GCON0505
0081 1  0045                DC      ET                                     GCON0510
0082 20 054C4000            LIBF    ELD        LOAD 10.                    GCON0515
0083 1  0042                DC      E10                                    GCON0520
0084 20 05067240            LIBF    EAXI       COMPUTE 10**EXP             GCON0525
0085 1  004B                DC      EXP                                    GCON0530
0086 20 05517A00            LIBF    EMPY       MULTIPLY BY MANTISSA        GCON0535
0087 1  0045                DC      ET                                     GCON0540
0088 01 7400004A            MDM   L TSGN,0     SKIP IF POSITIVE NUMBER     GCON0545
008A 20 22559000            LIBF    SNR        SET MINUS                   GCON0550
008B 0  C37A                LD    3 122        CHECK FOR OVER- OR UNDERFLOWGCON0555
008C 01 4C200093            BNZ     ERR                                    GCON0560
008E 0  1010                SLA     16         ZERO ACC                    GCON0565
008F 01 74010000            MDM   L GCON,1     NORMAL RETURN ADDRESS       GCON0570
0091 01 4C800000            B     I GCON       RETURN, CONSTANT IN FAC     GCON0575
                      *                                                    GCON0580
0093 0  1810          ERR   SRA     16         ERROR RETURN                GCON0585
0094 0  D37A                STO   3 122                                    GCON0590
```

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0095 01 4C800000            B     I  GCON                          GCON0595
                      *                                            GCON0600
                      * ROUTINE TO COMPUTE M*10+D                  GCON0605
0097 0  0000          ML10  DC       *-*                           GCON0610
0098 20 05517A00            LIBF     EMPY                          GCON0615
0099 1  0042                DC       E10                           GCON0620
009A 20 058A3580            LIBF     ESTO                          GCON0625
009B 1  0045                DC       ET                            GCON0630
009C 00 C4000201            LD    L  C                             GCON0635
009E 20 064D6063            LIBF     FLOAT                         GCON0640
009F 20 05044100            LIBF     EADD                          GCON0645
00A0 1  0045                DC       ET                            GCON0650
00A1 C1 4C800097            B     I  ML10                          GCON0655
00A4                        END                                    GCON0660

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   051 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                             GCON0665

*DELETE              GCON                                          GCON0670
CART ID 0001   DB ADDR  3696   DB CNT   000B

*STORE       WS  UA  GCON                                          GCON0675
CART ID 0001   DB ADDR  3A23   DB CNT   000B

// EJECT
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```
// ASM                                                                    CCON0005
*LIST                                                                     CCON0010
0000     030D6540          ENT      CCON                                  CCON0015
0000 0   0000        CCON  DC       *-*                                   CCON0020
0001 0   695E              STX    1 XR1+1                                 CCON0025
0002 0   6A5F              STX    2 XR2+1                                 CCON0030
0003 20  058A3580          LIBF     ESTO                                  CCON0035
0004 1   0069              DC       ET                                    CCON0040
0005 0   C064              LD       ET+1                                  CCON0045
0006 01  4C1800EB          BZ       ZERO       NUMBER IS ZERO             CCON0050
0008 0   180F              SRA      15                                    CCON0055
0009 0   D06A              STO      WORK                                  CCON0060
000A 01  4C18000F          BZ       CC1                                   CCON0065
000C 0   1891              SRT      17                                    CCON0070
000D 0   985C              SD       ET+1                                  CCON0075
000E 0   D85B              STD      ET+1                                  CCON0080
000F 0   C059        CC1   LD       ET                                    CCON0085
0010 0   1008              SLA      8                                     CCON0090
0011 0   1808              SRA      8                                     CCON0095
0012 0   905D              S        H40                                   CCON0100
0013 0   D055              STO      E2                                    CCON0105
0014 01  4C280089          BN       CC90                                  CCON0110
0016 01  4C180089          BZ       CC90                                  CCON0115
0018 0   8059              A        K1                                    CCON0120
0019 0   D04E              STO      T                                     CCON0125
001A 01  65800068          LDX   I1 T                                     CCON0130
001C 0   C84D              LDD      ET+1                                  CCON0135
001D 0   1180              SLT    1 0                                     CCON0140
001E 01  4C200089          BNZ      CC90                                  CCON0145
0020 0   18D0              XCH                                            CCON0150
0021 01  4C200089          BNZ      CC90                                  CCON0155
0023 0   9045              S        E2                                    CCON0160
0024 0   D002              STO      *+2                                   CCON0165
0025 0   611F              LDX    1 31                                    CCON0170
0026 00  75000000          MDX   L1 *-*                                   CCON0175
0028 0   7002              B        CC5                                   CCON0180
0029 0   7100              MDX    1 0                                     CCON0185
002A 0   705E              B        CC90                                  CCON0190
002B 0   C83E        CC5   LDD      ET+1                                  CCON0195
002C 0   1980              SRT    1 0                                     CCON0200
002D 0   D03F              STO      EVEN+1                                CCON0205
002E 0   1090              SLT      16                                    CCON0210
002F 0   D03F              STO      ODD+1                                 CCON0215
0030 0   610A              LDX    1 10                                    CCON0220
0031 0   C83A        DIA   LDD      EVEN                                  CCON0225
0032 0   A840              D        TEN                                   CCON0230
0033 0   D039              STO      EVEN+1                                CCON0235
0034 0   1090              SLT      16                                    CCON0240
0035 0   8838              AD       ODD                                   CCON0245
0036 0   A83C              D        TEN                                   CCON0250
0037 0   D037              STO      ODD+1                                 CCON0255
0038 0   1090              SLT      16                                    CCON0260
0039 01  D5000074          STO   L1 WORK                                  CCON0265
003B 0   71FF              MDX    1 -1                                    CCON0270
003C 0   70F4              B        DIA                                   CCON0275
003D 0   C047              LD       PL                                    CCON0280
003E 01  74000074          MDM   L  WORK,0                                CCON0285
0040 0   C046              LD       MI                                    CCON0290
0041 0   D032              STO      WORK                                  CCON0295
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0042 0  6201                LDX   2 1          UST DIGIT POSITION          CCON0300
0043 0  61F6                LDX   1 -10        NUMBER OF DIGITS            CCON0305
0044 01 C500007F     ZSPL   LD   L1 WORK+11    GET DIGIT                   CCON0310
0046 01 4C20004C            BNZ     ZSP        BRANCH IF NOT ZERO          CCON0315
0048 0  7101                MDX   1 1                                      CCON0320
0049 0  70FA                B       ZSPL                                   CCON0325
                     * ZERO SUPPRESSION                                    CCON0330
004A 0  7201                MDX   2 1          NUM=0, SO KEEP 1 DIGIT      CCON0335
004B 0  7007                B       ZSPE                                   CCON0340
004C 01 C500007F     ZSP    LD   L1 WORK+11    MOVE REMAINING DIGITS       CCON0345
004E 01 D6000074            STO  L2 WORK                                   CCON0350
0050 0  7201                MDX   2 1          COUNT DIGITS                CCON0355
0051 0  7101                MDX   1 1                                      CCON0360
0052 0  70F9                B       ZSP                                    CCON0365
0053 0  6A1D         ZSPE   STX   2 NC         SAVE NUMBER OF CHARS        CCON0370
0054 01 C4800000            LD   I  CCON       GET ADDR OF USER AREA       CCON0375
0056 0  901B                S       K1         -1                          CCON0380
0057 0  D003                STO     *+3                                    CCON0385
0058 01 C6000073     MLP    LD   L2 WORK-1     MOVE CHARACTERS TO          CCON0390
005A 00 D6000000            STO  L2 *-*        USERS AREA                  CCON0395
005C 0  72FF                MDX   2 -1                                     CCON0400
005D 0  70FA                B       MLP                                    CCON0405
005E 0  C012                LD      NC         LOAD CHARACTER COUNT        CCON0410
005F 00 65000000     XR1    LDX  L1 *-*                                    CCON0415
0061 00 66000000     XR2    LDX  L2 *-*                                    CCON0420
0063 01 74010000            MDM  L  CCON,1                                 CCON0425
0065 01 4C800000            B    I  CCON       RETURN                      CCON0430
                     *                                                     CCON0435
0068    0001         T      BSS  E  1                                      CCON0440
0069    0003         ET     BSS     3                                      CCON0445
0069                 E2     EQU     ET                                     CCON0450
006C 0  0000         EVEN   DC   E  0                                      CCON0455
006D 0  0000                DC      0                                      CCON0460
006E 0  0000         ODD    DC   E  0                                      CCON0465
006F 0  0000                DC      0                                      CCON0470
0070 0  0080         H40    DC      /80                                    CCON0475
0071 0  0000         NC     DC      0                                      CCON0480
0072 0  0001         K1     DC      1                                      CCON0485
0073 0  000A         TEN    DC      10                                     CCON0490
0074    0010         WORK   BSS     16                                     CCON0495
0084 0  003F         EOS    DC      /3F                                    CCON0500
0085 0  0030         PL     DC      /30                                    CCON0505
0086 0  0024         PLS    DC      /24                                    CCON0510
0087 0  0025         MI     DC      /25                                    CCON0515
0088 0  0005         K5     DC      5                                      CCON0520
                     *                                                     CCON0525
0006                 NSD    EQU     6          SIGNIFICANT DIGITS (1-8)    CCON0530
0089 01 44000111     CC90   BSI  L  FBTD       CONVERT TO EXPONENTIAL FORM CCON0535
008B 1  0074                DC      WORK                                   CCON0540
008C 0  6106                LDX   1 NSD                                    CCON0545
008D 0  C0FA                LD      K5                                     CCON0550
008E 0  D05B                STO     CARRY                                  CCON0555
008F 01 C5000076     RNDL   LD   L1 WORK+2     BEGIN ROUNDING LOOP         CCON0560
0091 0  8058                A       CARRY                                  CCON0565
0092 01 D5000076            STO  L1 WORK+2                                 CCON0570
0094 0  90DE                S       TEN                                    CCON0575
0095 01 4C2800B4            BN      ROVER      DONE ROUNDING               CCON0580
0097 01 D5000076            STO  L1 WORK+2                                 CCON0585
0099 0  C0D8                LD      K1                                     CCON0590
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009A 0   D04F                STO      CARRY                                  CCON0595
009B 0   71FF                MDX    1 -1                                     CCON0600
009C 0   70F2                B        RNDL                                   CCON0605
009D 0   C0D7                LD       WORK+1    CARRY TO HIGH DIGIT          CCON0610
009E 0   80D3                A        K1                                     CCON0615
009F 0   D0D5                STO      WORK+1                                 CCON0620
00A0 0   90D2                S        TEN                                    CCON0625
00A1 01  4C2800B4            BN       ROVER     DONE IF NO CARRY             CCON0630
00A3 0   C0CE                LD       K1                                     CCON0635
00A4 0   D0D0                STO      WORK+1    CARRY OFF LEFT END           CCON0640
00A5 01  74010068            MDM    L T,1       INCREMENT EXPONENT           CCON0645
00A7 0   7002                B        SAMS      NO SIGN CHANGE               CCON0650
00A8 0   C0DD                LD       PLS       SET PLUS SIGN                CCON0655
00A9 0   D0D6                STO      WORK+12                                CCON0660
00AA 0   C0BD        SAMS    LD       T                                      CCON0665
00AB 01  4C3000AF            BP       *+2                                    CCON0670
00AD 0   1810                SRA      16                                     CCON0675
00AE 0   90B9                S        T                                      CCON0680
00AF 0   1890                SRT      16                                     CCON0685
00B0 0   A8C2                D        TEN                                    CCON0690
00B1 0   D0CF                STO      WORK+13                                CCON0695
00B2 0   18D0                XCH                                             CCON0700
00B3 0   D0CE                STO      WORK+14                                CCON0705
00B4 01  74010068    ROVER   MDM    L T,1       ADD 1 TO EXPONENT            CCON0710
00B6 0   701C                B        FTST      MORE TESTING NEEDED          CCON0715
00B7 0   6205                LDX    2 NSD-1     EXP WAS -1, SO SHIFT RIGHT   CCON0720
00B8 01  C6000076    RSL     LD     L2 WORK+2   AND PUT 0 AHEAD OF DEC PT    CCON0725
00BA 01  D6000077            STO    L2 WORK+3                                CCON0730
00BC 0   72FF                MDX    2 -1                                     CCON0735
00BD 0   70FA                B        RSL                                    CCON0740
00BE 01  C4000075            LD     L  WORK+1                                CCON0745
00C0 01  D4000077            STO    L  WORK+3                                CCON0750
00C2 0   1810                SRA      16                                     CCON0755
00C3 01  D4000075            STO    L  WORK+1                                CCON0760
00C5 0   6209                LDX    2 NSD+3     NUMBER OF CHARS              CCON0765
00C6 01  C6000073    TZL     LD     L2 WORK-1   ELIM TRAILING 0'S            CCON0770
00C8 01  4C2000CD            BNZ      TZLT                                   CCON0775
00CA 0   72FF                MDX    2 -1                                     CCON0780
00CB 0   70FA                B        TZL                                    CCON0785
00CC 0   002B        PER     DC       /2B       PERIOD                       CCON0790
00CD 0   90FE        TZLT    S        PER                                    CCON0795
00CE 01  4C200053            BNZ      ZSPE                                   CCON0800
00D0 0   72FF                MDX    2 -1        ROUNDED TO INTEGER, SO       CCON0805
00D1 01  4C000053            B      L  ZSPE      REMOVE DECIMAL POINT         CCON0810
00D3 01  65800068    FTST    LDX    I1 T        GET EXP+1                    CCON0815
00D5 0   71FA                MDX    1 -NSD                                   CCON0820
00D6 0   7022                B        PEXP      USE EXPONENTIAL FORM         CCON0825
00D7 01  66800068            LDX    I2 T        USE FIXED POINT FORM         CCON0830
00D9 0   72FF                MDX    2 -1        COMPUTE TRUE EXPONENT        CCON0835
00DA 0   7002                B        SFT       SHIFT NECESSARY              CCON0840
00DB 0   6208                LDX    2 NSD+2     NO SHIFT NECESSARY           CCON0845
00DC 0   70E9                B        TZL                                    CCON0850
00DD 01  65000076    SFT     LDX    L1 WORK+2                                CCON0855
00DF 0   C100                LD     1 0                                      CCON0860
00E0 0   18D0                XCH                                             CCON0865
00E1 0   C101                LD     1 1                                      CCON0870
00E2 0   D100                STO    1 0                                      CCON0875
00E3 0   18D0                XCH                                             CCON0880
00E4 0   D101                STO    1 1                                      CCON0885
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00E5 0  7101                MDX   1 1                                    CCON0890
00E6 0  72FF                MDX   2 -1                                   CCON0895
00E7 0  70F7                B       SFT+2                                CCON0900
00E8 0  6208                LDX   2 NSD+2                                CCON0905
00E9 0  70DC                B       TZL                                  CCON0910
00EA 0  0000         CARRY  DC      0                                    CCON0915
00EB 01 C4800000     ZERO   LD   I  CCON                                 CCON0920
00ED 0  D001                STO     *+1                                  CCON0925
00EE 00 65000000            LDX  L1 *-*       ADDR OF USER AREA TO XR1   CCON0930
00F0 01 C4000085            LD   L  PL        LOAD BLANK                 CCON0935
00F2 0  D100                STO   1 0                                    CCON0940
00F3 0  1810                SRA     16        GET ZERO                   CCON0945
00F4 0  D101                STO   1 1                                    CCON0950
00F5 0  C002                LD      K2        CHARACTER COUNT            CCON0955
00F6 01 4C00005F            B    L  XR1       RETURN                     CCON0960
00F8 0  0002         K2     DC      2                                    CCON0965
00F9 0  6209         PEXP   LDX   2 NSD+3                                CCON0970
00FA 01 C4000085            LD   L  PL                                   CCON0975
00FC 01 D6000073            STO  L2 WORK-1                               CCON0980
00FE 0  61FC                LDX   1 -4                                   CCON0985
00FF 01 C5000083     ELP    LD   L1 WORK+15                              CCON0990
0101 01 D6000074            STO  L2 WORK      MOVE EXPONENT INTO POSTN   CCON0995
0103 0  7201                MDX   2 1                                    CCON1000
0104 0  7101                MDX   1 1                                    CCON1005
0105 0  70F9                B       ELP                                  CCON1010
0106 01 C400007F            LD   L  WORK+NSD+5 1ST DIGIT OF EXPONENT     CCON1015
0108 01 4C200053            BNZ     ZSPE                                 CCON1020
010A 0  72FF                MDX   2 -1        ZERO SUPPRESS ON EXPONENT  CCON1025
010B 01 C4000080            LD   L  WORK+NSD+6                           CCON1030
010D 01 D400007F            STO  L  WORK+NSD+5                           CCON1035
010F 01 4C000053            B    L  ZSPE                                 CCON1040
0009                 D      EQU     9                                    CCON1045
0111 0  0000         FBTD   DC      *-*       BINARY TO DECIMAL CONVERSN CCON1050
0112 01 6D00019E            STX  L1 FBX1+1    SAVE XR1                   CCON1055
0114 01 6E0001A0            STX  L2 FBX2+1    SAVE XR2                   CCON1060
0116 01 C4800111            LD   I  FBTD      GET OUTPUT ADDR            CCON1065
0118 01 74010111            MDM  L  FBTD,1    SET UP RETURN              CCON1070
011A 0  D063                STO     FPLC+1                               CCON1075
011B 0  C37D                LD    3 125       SCALE THE EXPONENT         CCON1080
011C 0  903A                S       FBCN+7    =127                       CCON1085
011D 01 D40001A7            STO  L  FLBCH     SAVE SCALED EXPONENT       CCON1090
011F 0  10A0                SLT     32        CLEAR ACC AND EXT TO ZERO  CCON1095
0120 01 DC0001A8            STD  L  MCAR      INITIALIZE STG AREAS       CCON1100
0122 0  62FB                LDX   2 -5        CLEAR BUF5                 CCON1105
0123 01 D6000180            STO  L2 BUF5+5                               CCON1110
0125 0  7201                MDX   2 +1                                   CCON1115
0126 0  70FC                B       *-4                                  CCON1120
0127 01 D40001AA            STO  L  FLE10     CLEAR CTR                  CCON1125
0129 0  CB7E                LDD   3 126       GET THE MANTISSA OF THE    CCON1130
012A 01 DC0001AC            STD  L  BUF5+1    ARGUMENT                   CCON1135
012C 01 4C180163            BSC  L  FBNX,+-   BR TO OUTPUT IF ZERO       CCON1140
012E 01 4C100134            BSC  L  *+4,-     OTHERWISE GET ABSOLUTE     CCON1145
0130 0  10A0                SLT     32        VALUE OF THE MANTISSA      CCON1150
0131 0  9B7E                SD    3 126                                  CCON1155
0132 01 DC0001AC            STD  L  BUF5+1                               CCON1160
0134 0  7011                MDX     FBTN2     BR TO GET PROPER FORM      CCON1165
                     *                                                   CCON1170
                     * THIS SECTION SCALES THE MANTISSA SO THAT THE      CCON1175
                     * BINARY PT IS BETWEEN WDS 1 AND 2 OF BUF5.  THE    CCON1180
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                        * MANTISSA IS KEPT CENTERED BY MULTIPLYING.          CCON118
                        *                                                    CCON119
0135 01 C40001A7        FBTN  LD    L  FLBCH      GET SCALED EXPONENT        CCON119
0137 01 4C180163              BSC   L  FBNX,+-    GO TO OUTPUT IF ZERO       CCON120
0139 01 4C280141              BSC   L  FBNM,+Z    DO A SHIFT RT IF NEG       CCON120
013B 01 440001E3              BSI   L  SLT        OTHERWISE SHIFT LEFT AND   CCON121
013D 01 74FF01A7              MDM   L  FLBCH,-1   DECREMENT FLBCH            CCON121
013F 0  1000                  NOP                                            CCON122
0140 0  7005                  MDX      FBTN2      GO TO GENERATE FRACTION DIG CCON122
                        *                                                    CCON123
0141 01 440001D6        FBNM  BSI   L  SRT        BRANCH TO SHIFT RIGHT SUBR CCON123
0143 01 740101A7              MDM   L  FLBCH,+1   ALTER EXPONENT TO MATCH    CCON124
0145 0  1000                  NOP                                            CCON124
                        *                                                    CCON125
                        * THIS SECTION CALLS THE MPY BY 10 RTN TO GET        CCON125
                        * AN INTEGER DIGIT FOR SCIENTIFIC FORMAT OUTPUT      CCON126
                        *                                                    CCON126
0146 01 C40001AB        FBTN2 LD    L  BUF5       GET THE CARRY WORD         CCON127
0148 01 4C200158              BSC   L  FBTN1,Z    BR TO DIVIDE BY 10 IF NON- CCON127
014A 01 440001C5              BSI   L  MPY        ZERO. IF ZERO GO TO MPY BY CCON128
014C 01 74FF01AA              MDM   L  FLE10,-1   10, AND KEEP TRACK W/CTR   CCON128
014E 0  1000                  NOP                                            CCON129
014F 0  70F6                  MDX      FBTN2      REPEAT                     CCON129
                        * CONSTANTS TABLE FOR FBTD                           CCON130
                        *                                                    CCON130
                        *                                                    CCON131
0150 0  0024            FBCN  DC         /24       PLUS +                     CCON131
0151 0  0025                  DC         /25       1 MINUS SIGN               CCON132
0152 0  0000                  DC         /00       2 ZERO                     CCON132
0153 0  002B                  DC         /2B       3 PERIOD                   CCON133
0154 0  000E                  DC         /0E       4 LETTER E                 CCON133
0155 0  000A                  DC         10        5 SINGLE WD 10             CCON134
0156 0  0030                  DC         /30       6 BLANK (SIGN FOR + NUMBR) CCON134
0157 0  007F                  DC         127       7 SCALE EXPONENT           CCON135
                        *                                                    CCON135
                        * THIS SECTION CALLS THE DIVIDE BY 10 RTN TO GET     CCON136
                        * AN INTEGERS FOR SCIENTIFIC FORMAT OUTPUT           CCON136
                        *                                                    CCON137
0158 01 C40001AB        FBTN1 LD    L  BUF5       CHECK CARRY AGAINST 10     CCON137
015A 0  90FA                  S        FBCN+5     =10                        CCON138
015B 01 4C280135              BSC   L  FBTN,+Z    LT 10, GO SCALE MANTISSA   CCON138
015D 01 440001B0              BSI   L  DIV        GT 10, BR TO DIVIDE SUBR   CCON139
015F 01 740101AA              MDM   L  FLE10,+1   KEEP TRACK OF POWERS OF 10 CCON139
0161 0  1000                  NOP                                            CCON140
0162 0  70F5                  MDX      FBTN1      REPEAT                     CCON140
                        *                                                    CCON141
                        * THIS SECTION ORGANIZES AND OUTPUTS A STRING OF     CCON141
                        * CODED CHARACTERS REPRESENTING THE FLTING POINT     CCON142
                        * DECIMAL EQUIVALENT OF THE INPUT BINARY NO.         CCON142
                        *                                                    CCON143
0163 01 6580017E        FBNX  LDX   I1 FPLC+1     OUTPUT ADDR IN XR1         CCON143
0165 0  C0F0                  LD       FBCN+6     = PLUS SIGN (BLANK)        CCON144
0166 0  D100                  STO    1 0          SET ALGEBRAIC SIGN TO      CCON144
0167 0  C37E                  LD     3 126        CORRESPOND TO THAT OF THE  CCON145
0168 01 4C10016C              BSC   L  *+2,-      INPUT BINARY NO.           CCON145
016A 0  C0E6                  LD       FBCN+1     = MINUS SIGN               CCON146
016B 0  D100                  STO    1 0                                    CCON146
016C 01 C40001AB              LD    L  BUF5       GET INTEGER DIGIT          CCON147
016E 0  80E3                  A        FBCN+2     SET TO CODE ************** CCON147
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016F 0  D101                STO   1 1          AND OUTPUT                    CCON1480
0170 0  C0C2                LD      FBCN+3     = PERIOD                      CCON1485
0171 0  D102                STO   1 2                                        CCON1490
0172 0  710B                MDX   1 D+2        MODIFY XR1 ACCORDING TO       CCON1495
0173 0  690A                STX   1 FPLC+1     NO. OF SIGNIFICANT DIGITS     CCON1500
0174 0  61F8                LDX   1 -D+1       FOR NEXT PART OF OUTPUT       CCON1505
                     *                                                       CCON1510
                     * GENERATE THE FRACTIONAL DIGITS                        CCON1515
                     *                                                       CCON1520
0175 0  1010         FBNX2 SLA     16         CLEAR THE CARRY WD OF BUF5    CCON1525
0176 01 D40001AB            STO  L  BUF5       GENERATE FRACTION DIGITS      CCON1530
0178 01 440001C5            BSI  L  MPY        BR TO MULTIPLY BY 10 SUBR     CCON1535
017A 01 C40001AB            LD   L  BUF5       GET THE RESULTING DIGIT       CCON1540
017C 0  80D5                A       FBCN+2     SET TO CODE ***************   CCON1545
017D 00 D5000000     FPLC   STO  L1 *-*        OUTPUT FRACTIONAL DIGIT       CCON1550
017F 0  7101                MDX   1 1                                        CCON1555
0180 0  70F4                MDX     FBNX2                                    CCON1560
                     *                                                       CCON1565
                     * GENERATE THE EXPONENT OF TEN                          CCON1570
                     *                                                       CCON1575
0181 01 C40001AA            LD   L  FLE10      SAVE POWER OF 10 **********   CCON1580
0183 01 D4000068            STO  L  T          FOR USE LATER *************   CCON1585
0185 01 6580017E            LDX  I1 FPLC+1     GET NEXT OUTPUT ADDR          CCON1590
0187 0  C0CC                LD      FBCN+4     = LETTER E                    CCON1595
0188 0  D100                STO   1 0          SET E                         CCON1600
0189 0  C0C6                LD      FBCN       GET PLUS AND STORE            CCON1605
018A 0  D101                STO   1 1                                        CCON1610
018B 0  1010                SLA     16         GET OPPOSITE SIGN OF FLE10    CCON1615
018C 01 940001AA            S    L  FLE10                                    CCON1620
018E 01 4C080194            BSC  L  *+4,+      BR IF NOT POSITIVE            CCON1625
0190 01 D40001AA            STO  L  FLE10      OTHERWISE REVERSE SIGN IN     CCON1630
0192 0  C0BE                LD      FBCN+1     FLE10,AND REPLACE THE         CCON1635
0193 0  D101                STO   1 1          STORED PLUS WITH MINUS        CCON1640
0194 01 C40001AA            LD   L  FLE10      GET ABS VALUE OF EXPONENT     CCON1645
0196 0  1890                SRT     16         SHIFT TO EXTENSION AND        CCON1650
0197 0  A8BD                D       FBCN+5     DIVIDE BY 10                  CCON1655
0198 0  80B9                A       FBCN+2     SET TO CODE ***************   CCON1660
0199 0  D102                STO   1 2          STORED IN TENS POSITION       CCON1665
019A 0  18D0                XCH                GET REMAINDER TO ACC          CCON1670
019B 0  80B6                A       FBCN+2     SET TO CODE ***************   CCON1675
019C 0  D103                STO   1 3          STORED IN UNITS POSITION      CCON1680
019D 00 65000000     FBX1   LDX  L1 *-*        RESTORE XR1                   CCON1685
019F 00 66000000     FBX2   LDX  L2 *-*        RESTORE XR2                   CCON1690
01A1 01 4C800111            B    I  FBTD       RETURN TO CALLER*             CCON1695
                     * CONSTANTS                                             CCON1700
                     *                                                       CCON1705
01A3 0  0005         FLCN   DC      5                                        CCON1710
01A4 0  000A                DC      10         FLCN+1                        CCON1715
01A5 0  8000                DC      /8000      FLCN+2                        CCON1720
01A6 0  FFFB                DC      -5         FLCN+3                        CCON1725
01A7    0001         FLBCH  BSS     1          STORAGE FOR BINARY EXPONENT   CCON1730
01A8    0002         MCAR   BSS  E  2          TWO WORD CARRY BUFFER         CCON1735
01AA    0001         FLE10  BSS     1          EXPONENT OF 10 CTR            CCON1740
01AB    0005         BUF5   BSS     5          5-WD WORKING BUFFER           CCON1745
                     *                                                       CCON1750
                     * SUBROUTINE TO DIVIDE K-PRECISION NUMBER IN            CCON1755
                     * BUF5 BY 10.                                           CCON1760
                     *                                                       CCON1765
01B0 0  0000         DIV    DC      *-*        ENTRY                         CCON1770
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01B1 0  10A0                SLT      32          CLEAR ACC AND EXT                CCON1775
01B2 0  62FB                LDX    2 -5          SET COUNTER                      CCON1780
01B3 01 C60001B0     DIVL   LD    L2 BUF5+5      GET NEXT WORD                    CCON1785
01B5 0  18D0                XCH                   SUBTRACT 5 FROM EXTENSION        CCON1790
01B6 0  90EC                S        FLCN        =5                               CCON1795
01B7 0  2002                LDS      2           TURNS ON CARRY                   CCON1800
01B8 0  4828                BSC      +Z          BR IF GT 5                       CCON1805
01B9 0  90EC                S        FLCN+3      IF LT 5 RESTORE 5                CCON1810
01BA 0  2801                STS      DIVC        AND TURN OFF CARRY               CCON1815
01BB 0  A8E8                D        FLCN+1      =10 PERFORM DIVIDE               CCON1820
01BC 0  2000         DIVC   LDS      *-*         GET STATUS                       CCON1825
01BD 0  4802                BSC      C           IF LT 5, BR TO ST QUOTIENT       CCON1830
01BE 0  80E6                A        FLCN+2      IF GT 5, ADD /8000               CCON1835
01BF 01 D60001B0            STO    L2 BUF5+5      STORE QUOTIENT                   CCON1840
01C1 0  7201                MDX    2 +1                                           CCON1845
01C2 0  70F0                MDX      DIVL        REPEAT LOOP                      CCON1850
                     *                                                            CCON1855
01C3 01 4C8001B0            BSC    I  DIV        RETURN                           CCON1860
                     * SUBROUTINE TO MPY 5-PRECISON NUMBER IN                     CCON1865
                     * BUF5 BY 10. CONTENTS OF MCAR+1 ARE ADDED TO RSLT           CCON1870
                     *                                                            CCON1875
01C5 0  0000         MPY    DC       *-*         ENTRY                            CCON1880
01C6 0  6205                LDX    2 +5          SET COUNTER                      CCON1885
01C7 01 C60001AA     MPYL   LD    L2 BUF5-1      GET A WORD OF BUF5               CCON1890
01C9 0  A0DA                M        FLCN+1      =10 MPY BY 10                    CCON1895
01CA 0  4828                BSC      +Z          BR IF PTV                        CCON1900
01CB 0  80D8                A        FLCN+1      IF NEG, ADD 10                   CCON1905
01CC 0  88DB                AD       MCAR        ADD PREVIOUS EXCESS              CCON1910
01CD 0  D0DB                STO      MCAR+1      STORE PRESENT EXCESS             CCON1915
01CE 0  1090                SLT      16          GET EXT = PRODUCT                CCON1920
01CF 01 D60001AA            STO    L2 BUF5-1      PUT PRODUCT BACK IN BUF5         CCON1925
01D1 0  72FF                MDX    2 -1          DECR CTR FOR RET                 CCON1930
01D2 0  70F4                MDX      MPYL        REPEAT                           CCON1935
01D3 0  C0D5                LD       MCAR+1      STORE LAST EXCESS IN ACC **      CCON1940
01D4 01 4C8001C5            B      I  MPY        RETURN                           CCON1945
                     *                                                            CCON1950
                     * THIS ROUTINE DOES A SHIFT RIGHT ONE BIT (THROUGH           CCON1955
                     * WORD BOUNDARIES) OF BUF5 THROUGH BUF5+4.                   CCON1960
                     *                                                            CCON1965
01D6 0  0000         SRT    DC       *-*         ENTRY                            CCON1970
01D7 0  62FB                LDX    2 -5          SET COUNTER                      CCON1975
01D8 0  10A0                SLT      32          CLEAR ACC AND EXT                CCON1980
01D9 01 C60001B0     SRTL   LD    L2 BUF5+5      GET A WORD                       CCON1985
01DB 0  18C1                RTE      1           SHIFT LAST BIT OF ACC TO         CCON1990
01DC 01 D60001B0            STO    L2 BUF5+5      FIRST OF EXT AND VICE VERSA      CCON1995
01DE 0  18CF                RTE      15          POSITION EXTENSION BIT           CCON2000
01DF 0  7201                MDX    2 +1                                           CCON2005
01E0 0  70F8                MDX      SRTL        REPEAT LOOP                      CCON2010
01E1 01 4C8001D6            B      I  SRT        RETURN                           CCON2015
                     *                                                            CCON2020
                     * THIS ROUTINE DOES A SHIFT LEFT ONE BIT (THROUGH            CCON2025
                     * WORD BOUNDARIES) OF BUF5 THROUGH BUF5+4.                   CCON2030
                     *                                                            CCON2035
01E3 0  0000         SLT    DC       *-*         ENTRY                            CCON2040
01E4 0  6205                LDX    2 +5          SET COUNTER                      CCON2045
01E5 0  10A0                SLT      32          CLEAR ACC AND EXT                CCON2050
01E6 01 C60001AA     SLTL   LD    L2 BUF5-1      GET A WORD                       CCON2055
01E8 0  18DF                RTE      31          EFFECTIVE ROTATE LEFT 1          CCON2060
01E9 01 D60001AA            STO    L2 BUF5-1      REPLACE SHIFTED WORD             CCON2065
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01EB 0  108F                SLT      15        POSITION EXTENSION          CCON2070
01EC 0  72FF                MDX    2 -1        DECR CTR                    CCON2075
01ED 0  70F8                MDX      SLTL      REPEAT                      CCON2080
01EE 01 4C8001E3            B     I  SLT       RETURN                      CCON2085
01F0                        END                                            CCON2090

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   067 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                     CCON2095

*DELETE              CCON                                                  CCON2100
CART ID 0001   DB ADDR  3696   DB CNT   001C

*STORE       WS  UA  CCON                                                  CCON2105
CART ID 0001   DB ADDR  3A0E   DB CNT   001C

// EJECT
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// ASM                                                                  BIN00005
*LIST                                                                   BIN00010
*SYSTEM SYMBOL TABLE                                                    BIN00015
                      * CARD INPUT ROUTINE                              BIN00020
                      * TRANSLATES FROM CARD CODE TO BASIC INTERNAL CODE BIN00025
0000     02255000           ENT      BIN                                BIN00030
0000 0   0000        BIN    DC       *-*                                BIN00035
0001 0   694A               STX    1 XR1+1      SAVE INDEX REGISTER 1    BIN00040
0002 0   6A4B               STX    2 XR2+1      SAVE INDEX REGISTER 2    BIN00045
0003 00  74000204           MDM  L   KBCP,0     SHOULD KEYBOARD BE USED  BIN00050
0005 0   704D               B        KEYBD      YES                      BIN00055
0006 20  03059130           LIBF     CARD0      START CARD READ          BIN00060
0007 0   1000               DC       /1000                               BIN00065
0008 1   007C               DC       RBUF                                BIN00070
0009 20  03059130           LIBF     CARD0      WIAT FOR READ COMPLETE   BIN00075
000A 0   0000               DC       /0000                               BIN00080
000B 0   70FD               B        *-3                                 BIN00085
                      * TRIM OFF BLANKS AT END OF STATEMENT             BIN00090
000C 0   6150               LDX    1 80                                  BIN00095
000D 01  C500007C    B1     LD   L1  RBUF                                BIN00100
000F 01  4C200013           BNZ      B2         BRANCH OUT ON NON-BLANK  BIN00105
0011 0   71FF               MDX    1 -1                                  BIN00110
0012 0   70FA               B        B1                                  BIN00115
0013 0   C063        B2     LD       EOS        PUT END-OF-STATEMENT CODE BIN00120
0014 01  D500007D           STO  L1  RBUF+1     AFTER LAST NON-BLANK CHAR BIN00125
0016 0   7100        B2A    MDX    1 0          IS XR1=0                 BIN00130
0017 0   7001               B        *+1        NO                       BIN00135
0018 0   702F               B        NTM        YES, SO RETURN           BIN00140
                      * BEGIN CONVERSION LOOP TO CONVERT TO INTERNAL CODE BIN00145
0019 01  C500007C    B3     LD   L1  RBUF       GET CHARACTER FROM BUFFER BIN00150
001B 0   18D0               XCH                 PUT IT IN EXT            BIN00155
001C 0   1810               SRA      16         ZERO THE ACC             BIN00160
001D 0   1083               SLT      3          SHIFT IN 12-11-0 PUNCHES BIN00165
001E 0   4049               BSI      GETP       DETERMINE WHICH PUNCH    BIN00170
001F 0   1089               SLT      9          SHIFT IN 1-9 PUNCHES     BIN00175
0020 01  4C040071           BOD      NINE       BRANCH IF 9 PUNCH        BIN00180
0022 0   1882               SRT      2          PUT 8 BACK IN EXT        BIN00185
0023 0   6A55               STX    2 T1         SAVE ZONE PUNCH CODE     BIN00190
0024 0   4043               BSI      GETP       GET 1-7 POSITION         BIN00195
0025 0   6A54               STX    2 T2         SAVE 1-7 PUNCH CODE      BIN00200
0026 0   C052               LD       T1         GET ZONE PUNCH CODE      BIN00205
0027 0   1003               SLA      3          POSITION IT              BIN00210
0028 0   E851               OR       T2         OR IN 1-7 PUNCH CODE     BIN00215
0029 0   D04F               STO      T1         SAVE RESULTING 5 BITS    BIN00220
002A 01  66800079           LDX   I2 T1         PUT 5 BITS INTO XR2      BIN00225
002C 01  C60000D2           LD   L2  TABLE      GET WORD FROM TABLE      BIN00230
002E 0   18D0               XCH                 WORD TO EXT              BIN00235
002F 0   4828               SKP      +Z         SKIP ON NO 8 PUNCH       BIN00240
0030 0   1088               SLT      8                                   BIN00245
0031 0   1088               SLT      8                                   BIN00250
0032 0   E045               AND      H00FF      MASK OUT CODE            BIN00255
0033 01  D500007C    B4     STO  L1  RBUF       STORE CODE BACK INTO BUFFER BIN00260
0035 0   71FF               MDX    1 -1                                  BIN00265
0036 0   70E2               B        B3         GO GET NEXT CHAR         BIN00270
                      *      CHECK FOR MONITOR CONTROL CARD              BIN00275
0037 0   C045               LD       RBUF+1     IS COL 1 /               BIN00280
0038 0   9018               S        SLASH                               BIN00285
0039 01  4C200048           BNZ      NTM        BRANCH IF NOT            BIN00290
003B 0   C042               LD       RBUF+2     IS COL 2 /               BIN00295
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003C 0  9014                S       SLASH                                  BIN00300
003D 01 4C200048            BNZ     NTM       BRANCH IF NOT                BIN00305
003F 0  C03F                LD      RBUF+3    IS COL 3 BLANK               BIN00310
0040 0  9011                S       BLANK                                  BIN00315
0041 01 4C200048            BNZ     NTM                                    BIN00320
0043 0  C003                LD      NK1       SET MONITOR                  BIN00325
0044 00 D400000F            STO  L  $CTSW     CONTROL RECORD               BIN00330
0046 0  7003                B       RTN       TRAP SWITCH                  BIN00335
0047 0  0001         NK1    DC      1                                      BIN00340
000F                 $CTSW  EQU     /000F     CONTROL RECORD TRAP SWTCH    BIN00345
0048 01 74010000     NTM    MDM  L  BIN,1     NORMAL RETURN                BIN00350
004A 0  C030         RTN    LD      RBA       LOAD POINTER TO LINE         BIN00355
004B 00 65000000     XR1    LDX  L1 *-*       RESTORE XR1                  BIN00360
004D 00 66000000     XR2    LDX  L2 *-*       RESTORE XR2                  BIN00365
004F 01 4C800000            B    I  BIN                                    BIN00370
0051 0  0026         SLASH  DC      /26       INTERNAL CODE FOR /          BIN00375
0052 0  0030         BLANK  DC      /30       INTERNAL CODE FOR BLANK      BIN00380
                     * ROUTINE TO HANDLE KEYBOARD INPUT                    BIN00385
0053 20 23A17170     KEYBD  LIBF    TYPE0     REQUEST INPUT                BIN00390
0054 0  1000                DC      /1000                                  BIN00395
0055 1  007C                DC      RBUF                                   BIN00400
0056 20 23A17170            LIBF    TYPE0     WAIT FOR INPUT COMPLETE      BIN00405
0057 0  0000                DC      /0000                                  BIN00410
0058 0  70FD                B       *-3                                    BIN00415
0059 0  61B0                LDX   1 -80                                    BIN00420
005A 01 C50000CD     NLLP   LD   L1 RBUF+81   SCAN TO FIND NL CHAR         BIN00425
005C 0  F00A                FCR     NL                                     BIN00430
005D 01 4C180061            BZ      FDNL                                   BIN00435
005F 0  7101                MDX   1 1                                      BIN00440
0060 0  70F9                B       NLLP                                   BIN00445
0061 0  C015         FDNL   LD      EOS                                    BIN00450
0062 01 D50000CD            STO  L1 RBUF+81   PUT EOS IN PLACE OF NL       BIN00455
0064 0  7150                MDX   1 80        COMPLEMENT XR1               BIN00460
0065 0  1000                NOP               ALLOW FOR SKIP               BIN00465
0066 0  70AF                B       B2A       CONVERT TO INTERNAL CODE     BIN00470
0067 0  4110         NL     DC      /4110     NEW LINE CHAR                BIN00475
                     * SUBROUTINE TO DETERMINE PUNCH POSITION              BIN00480
0068 0  0000         GETP   DC      *-*                                    BIN00485
0069 0  6210                LDX   2 16                                     BIN00490
006A 0  1240                SLCA  2 0                                      BIN00495
006B 0  1001                SLA     1         GET RID OF PUNCH             BIN00500
006C 01 4C980068            BZ   I  GETP      RETURN IF NO MULTI-PUNCH     BIN00505
006E 0  C063         B7     LD      TABLE     MULTIPLE-PUNCH, SO           BIN00510
006F 0  1808                SRA     8         GET BLANK FROM TABLE         BIN00515
0070 0  70C2                B       B4        AND STORE IT                 BIN00520
                     * SPECIAL CODE FOR CHARACTERS WITH 9 PUNCH            BIN00525
0071 0  1801         NINE   SRA     1         GET RID OF 9 PUNCH           BIN00530
0072 01 4C20006E            BNZ     B7        INVALID IF PUNCHES IN 1-8    BIN00535
0074 01 C60000CE            LD   L2 STAB      ZONE CODE IN XR2             BIN00540
0076 0  70BC                B       B4        STORE THE CHARACTER          BIN00545
                     * CONSTANTS, TABLES AND BUFFERS                       BIN00550
0077 0  003F         EOS    DC      /3F                                    BIN00555
0078 0  00FF         H00FF  DC      /FF                                    BIN00560
0079 0  0000         T1     DC      0                                      BIN00565
007A 0  0000         T2     DC      0                                      BIN00570
007B 1  007D         RBA    DC      RBUF+1                                 BIN00575
007C 0  0050         RBUF   DC      80        INPUT BUFFER                 BIN00580
007D    0051                BSS     81                                     BIN00585
00CE 0  0009         STAB   DC      /0009     9                            BIN00590
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00CF 0  0023              DC      /0023    0-9                    BIN00595
00D0 0  001B              DC      /001B    11-9                   BIN00600
00D1 0  0012              DC      /0012    12-9                   BIN00605
00D2 0  3008        TABLE DC      /3008    BLANK    8             BIN00610
00D3 0  072D              DC      /072D    7        7-8           BIN00615
00D4 0  0628              DC      /0628    6        6-8           BIN00620
00D5 0  052D              DC      /052D    5        5-8           BIN00625
00D6 0  0430              DC      /0430    4        4-8           BIN00630
00D7 0  0330              DC      /0330    3        3-8           BIN00635
00D8 0  0230              DC      /0230    2        2-8           BIN00640
00D9 0  0130              DC      /0130    1        1-8           BIN00645
00DA 0  0022              DC      /0022    0        0-8           BIN00650
00DB 0  2130              DC      /2130    0-7      0-7-8         BIN00655
00DC 0  2030              DC      /2030    0-6      0-6-8         BIN00660
00DD 0  1F30              DC      /1F30    0-5      0-5-8         BIN00665
00DE 0  1E30              DC      /1E30    0-4      0-4-8         BIN00670
00DF 0  1D2C              DC      /1D2C    0-3      0-3-8         BIN00675
00E0 0  1C30              DC      /1C30    0-2      0-2-8         BIN00680
00E1 0  2630              DC      /2630    0-1      0-1-8         BIN00685
00E2 0  251A              DC      /251A    11       11-8          BIN00690
00E3 0  1930              DC      /1930    11-7     11-7-8        BIN00695
00E4 0  1831              DC      /1831    11-6     11-6-8        BIN00700
00E5 0  172A              DC      /172A    11-5     11-5-8        BIN00705
00E6 0  1627              DC      /1627    11-4     11-4-8        BIN00710
00E7 0  152F              DC      /152F    11-3     11-3-8        BIN00715
00E8 0  1430              DC      /1430    11-2     11-2-8        BIN00720
00E9 0  1330              DC      /1330    11-1     11-1-8        BIN00725
00EA 0  2E11              DC      /2E11    12       12-8          BIN00730
00EB 0  1030              DC      /1030    12-7     12-7-8        BIN00735
00EC 0  0F24              DC      /0F24    12-6     12-6-8        BIN00740
00ED 0  0E29              DC      /0E29    12-5     12-5-8        BIN00745
00EE 0  0D30              DC      /0D30    12-4     12-4-8        BIN00750
00EF 0  0C2B              DC      /0C2B    12-3     12-3-8        BIN00755
00F0 0  0B30              DC      /0B30    12-2     12-2-8        BIN00760
00F1 0  0A30              DC      /0A30    12-1     12-1-8        BIN00765
00F2                      END                                    BIN00770

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   055 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                            BIN00775

*DELETE              BIN                                          BIN00780
CART ID 0001   DB ADDR  3696   DB CNT   000B

*STORE       WS  UA  BIN                                          BIN00785
CART ID 0001   DB ADDR  3A1A   DB CNT   000B

// EJECT
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// ASM                                                                  BOUT0005
*LIST                                                                   BOUT0010
* SYSTEM SYMBOL TABLE                                                   BOUT0015
001B     025A48C0            ENT      BOUT                              BOUT0020
00A0     17205044            ENT      PHEAD                             BOUT0025
0000     025A48D7            ENT      BOUTP                             BOUT0030
0000 0   0000         BOUTP  DC       *-*                               BOUT0035
0001 0   6926                STX    1 XR1+1      SAVE INDEX REG 1       BOUT0040
0002 0   6A27                STX    2 XR2+1      SAVE INDEX REG 2       BOUT0045
0003 01  D400009A            STO   L  BLAD       SAVE POINTER TO LINE   BOUT0050
0005 00  C4000205            LD    L  PGOF                             BOUT0055
0007 01  442000A0            BSI   L  PHEAD,Z                          BOUT0060
0009 01  C400009A            LD    L  BLAD                             BOUT0065
000B 01  D400009B            STO   L  LAD                              BOUT0070
000D 01  C4000096            LD    L  ONE                              BOUT0075
000F 0   18D0                XCH                                       BOUT0080
0010 01  C4000096            LD    L  ONE                              BOUT0085
0012 01  DC000094            STD   L  PACKD      PACKED INPUT          BOUT0090
0014 0   4018                BSI      PRL                              BOUT0095
0015 01  65800028            LDX   I1 XR1+1                            BOUT0100
0017 01  6680002A            LDX   I2 XR2+1                            BOUT0105
0019 01  4C800000            B     I  BOUTP                            BOUT0110
                      *                                                BOUT0115
001B 0   0000         BOUT   DC       *-*                              BOUT0120
001C 0   690B                STX    1 XR1+1      SAVE INDEX REGISTER 1  BOUT0125
001D 0   6A0C                STX    2 XR2+1      SAVE INDEX REGISTER 2  BOUT0130
001E 0   D07B                STO      BLAD       SAVE POINTER TO LINE   BOUT0135
001F 00  74000205            MDM   L  PGOF,0     CHECK FOR OVERFLOW     BOUT0140
0021 0   407E                BSI      PHEAD                            BOUT0145
0022 0   C077                LD       BLAD                             BOUT0150
0023 0   D077                STO      LAD                              BOUT0155
0024 0   10A0                SLT      32                               BOUT0160
0025 0   D86E                STD      PACKD      UNPACKED INPUT        BOUT0165
0026 0   4006                BSI      PRL                              BOUT0170
0027 00  65000000     XR1    LDX   L1 *-*        RESTORE XR1           BOUT0175
0029 00  66000000     XR2    LDX   L2 *-*        RESTORE XR2           BOUT0180
002B 01  4C80001B            B     I  BOUT                             BOUT0185
002D 0   0000         PRL    DC       *-*                              BOUT0190
002E 00  74000204            MDM   L  KBCP,0     USING TYPEWRITER      BOUT0195
0030 0   4035                BSI      TWAIT      YES, SO WAIT FOR I/O DONE BOUT0200
                      * LOOP TO CONVERT CHARACTERS TO 1403 CODE AND PACK BOUT0205
0031 0   62C4                LDX    2 -60                             BOUT0210
0032 0   4039         B1     BSI      GETC       GET + CONVERT A CHAR  BOUT0215
0033 01  7400009C            MDM   L  LAST,0     WAS IT EOS            BOUT0220
0035 0   7001                B        *+1        NO                    BOUT0225
0036 0   700C                B        B5         YES                   BOUT0230
0037 0   1008                SLA      8          POSITION 1ST CHAR     BOUT0235
0038 0   D05E                STO      T          AND SAVE IT           BOUT0240
0039 0   4032                BSI      GETC       GET NEXT CHAR         BOUT0245
003A 0   E85C                OR       T          OR IN 1ST ONE         BOUT0250
003B 01  D6000127            STO   L2 PBUF+61    STORE IN BUFFER       BOUT0255
003D 0   7201                MDX    2 1                               BOUT0260
003E 0   7001                B        *+1        NOT OVER 120 YET      BOUT0265
003F 0   7003                B        B5         OUT OF PRINT BUFFER- PRINT BOUT0270
0040 01  7400009C            MDM   L  LAST,0     WAS 2ND CHAR EOS      BOUT0275
0042 0   70EF                B        B1         NO, GO BACK FOR MORE  BOUT0280
0043 0   723C         B5     MDX    2 60         COMPUTE NO. OF WORDS  BOUT0285
0044 0   1000                NOP                                      BOUT0290
0045 01  6E0000EA            STX   L2 PBUF       STORE BUFFER LENGTH   BOUT0295
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```
0047 0  7200                MDX    2 0          CHECK FOR ZERO LENGTH          BOUT0300
0048 0  7006                B        B7         NON-ZERO, SO PRINT LINE        BOUT0305
0049 00 74000204            MDM   L  KBCP,0     TYPEWRITER OR 1403             BOUT0310
004B 0  700C                B        TSKIP      TYPEWRITER                     BOUT0315
004C 20 176558F3            LIBF     PRNT3      ZERO LENGTH, SO SKIP 1 LINE    BOUT0320
004D 0  3D00                DC       /3D00                                     BOUT0325
004E 0  7007                B        B9                                        BOUT0330
004F 00 74000204     B7     MDM   L  KBCP,0     1403 OR TYPEWRITER             BOUT0335
0051 0  700A                B        TPRNT      TYPEWRITER                     BOUT0340
0052 20 176558F3            LIBF     PRNT3      PRINT USING 1403 PRINTER       BOUT0345
0053 0  2000                DC       /2000                                     BOUT0350
0054 1  00EA                DC       PBUF                                      BOUT0355
0055 1  015A                DC       PERR                                      BOUT0360
0056 01 4C80002D     B9     B     I  PRL                                       BOUT0365
0058 20 23A17170     TSKIP  LIBF     TYPE0      SKIP ONE LINE ON TYPEWIRTER    BOUT0370
0059 0  2000                DC       /2000                                     BOUT0375
005A 1  0064                DC       CRLF                                      BOUT0380
005B 0  70FA                B        B9                                        BOUT0385
005C 20 23A17170     TPRNT  LIBF     TYPE0      CARRIAGE RETURN                BOUT0390
005D 0  2000                DC       /2000                                     BOUT0395
005E 1  0064                DC       CRLF                                      BOUT0400
005F 0  4006                BSI      TWAIT      WAIT FOR COMPLETION            BOUT0405
0060 20 23A17170            LIBF     TYPE0      PRINT THE LINE                 BOUT0410
0061 0  2000                DC       /2000                                     BOUT0415
0062 1  00EA                DC       PBUF                                      BOUT0420
0063 0  70F2                B        B9         RETURN                         BOUT0425
0064 0  0001         CRLF   DC       1                                         BOUT0430
0065 0  8105                DC       /8105      CARRIAGE RETURN                BOUT0435
0066 0  0000         TWAIT  DC       *-*                                       BOUT0440
0067 20 23A17170            LIBF     TYPE0                                     BOUT0445
0068 0  0000                DC       /0000                                     BOUT0450
0069 0  70FD                B        *-3                                       BOUT0455
006A 01 4C800066            B     I  TWAIT                                     BOUT0460
                     * SUBROUTINE TO GET NEXT CHARACTER AND                   BOUT0465
                     * CONVERT IT TO 1403 CODE.  THE SWITCH LAST IS SET       BOUT0470
                     * TO ZERO IF THE EOS CODE IS ENCOUNTERED.                BOUT0475
006C 0  0000         GETC   DC       *-*                                       BOUT0480
006D 01 C480009B            LD    I  LAD        GET CHARACTER                  BOUT0485
006F 01 74000095            MDM   L  LR         SEE IF LEFT OR RIGHT CHAR      BOUT0490
0071 0  1808                SRA      8          GET LEFT CHAR                  BOUT0495
0072 0  E02A                AND      MASKF                                     BOUT0500
0073 0  D024                STO      T1         SAVE CHAR                      BOUT0505
0074 0  F024                EOR      EOS        CHECK FOR EOS                  BOUT0510
0075 0  D026                STO      LAST                                      BOUT0515
0076 0  C021                LD       T1         GET CHAR AGAIN                 BOUT0520
0077 01 94000159            S     L  TL         CHECK FOR LONGER THAN TABLE    BOUT0525
0079 01 4C30008A            BP       GT2        OFF TABLE, SUPPLY BLANK        BOUT0530
007B 01 65800098            LDX   I1 T1         PUT CODE IN XR1                BOUT0535
007D 01 74000094     GT0    MDM   L  PACKD      CHECK FOR PACKED INPUT         BOUT0540
007F 0  700C                B        FIXUP      YES, PACKED                    BOUT0545
0080 01 7401009B            MDM   L  LAD,1      UPDATE CHAR POINTER            BOUT0550
0082 01 C5000127     GT1    LD    L1 CTBL       GET ENTRY FROM CODE TABLE      BOUT0555
0084 00 74000204            MDM   L  KBCP,0     USING TYPEWRITER               BOUT0560
0086 0  1808                SRA      8          YES, SHIFT CORRECT DOE IN      BOUT0565
0087 0  E015                AND      MASKF      MASK OUT UNWANTED BITS         BOUT0570
0088 01 4C80006C            B     I  GETC                                      BOUT0575
008A 0  6130         GT2    LDX    1 /30        CODE FOR BLANK                 BOUT0580
008B 0  70F1                B        GT0                                       BOUT0585
008C 0  C009         FIXUP  LD       ONE                                       BOUT0590
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```
008D 0  F007                FOR     LR        FLIP LR                      BOUT0595
008E 0  D006                STC     LR                                     BOUT0600
008F 0  C00B                LD      LAD                                    BOUT0605
0090 0  8004                A       LR                                     BOUT0610
0091 0  D009                STO     LAD                                    BOUT0615
0092 0  70EF                B       GT1                                    BOUT0620
0094    0002        PACKD   BSS   E 2                                      BOUT0625
0095                LR      EQU     PACKD+1                                BOUT0630
0096 0  0001        ONE     DC      1                                      BOUT0635
0097 0  0000        T       DC      0                                      BOUT0640
0098 0  0000        T1      DC      0                                      BOUT0645
0099 0  003F        EOS     DC      /3F                                    BOUT0650
009A 0  0000        BLAD    DC      0                                      BOUT0655
009B 0  0000        LAD     DC      0                                      BOUT0660
009C 0  0000        LAST    DC      0                                      BOUT0665
009D 0  00FF        MASKF   DC      /FF                                    BOUT0670
009E 0  0030        BL      DC      /30       BLANK                        BOUT0675
009F 0  000A        TEN     DC      10                                     BOUT0680
00A0 0  0000        PHEAD   DC      *-*       PRINT HEADING LINE           BOUT0685
00A1 0  6943                STX   1 PX1+1     SAVE XR1                     BOUT0690
00A2 0  6A44                STX   2 PX2+1     SAVE XR2                     BOUT0695
00A3 00 74000205            MDM   L PGOF      CHECK FOR PAGE OVERFLOW      BOUT0700
00A5 0  7001                B       *+1       OVERFLOW, SO SKIP TO CH 1    BOUT0705
00A6 0  7002                B       *+2       NO OVERFLOW                  BOUT0710
00A7 20 176558F3            LIBF    PRNT3     SKIP TO CHAN 1 ON 1403       BOUT0715
00A8 0  3100                DC      /3100                                  BOUT0720
00A9 00 C400020B            LD    L PGCT      CONVERT PAGE NO. TO DECML    BOUT0725
00AB 0  6104                LDX   1 4                                      BOUT0730
00AC 0  1890                SRT     16                                     BOUT0735
00AD 0  A8F1        DLP     D       TEN                                    BOUT0740
00AE 0  18D0                XCH                                            BOUT0745
00AF 01 D50000EA            STC   L1 PBUF     USE PBUF FOR TEMP STORAGE    BOUT0750
00B1 0  1810                SRA     16                                     BOUT0755
00B2 0  71FF                MDX   1 -1                                     BOUT0760
00B3 0  70F9                B       DLP                                    BOUT0765
00B4 00 C400020B            LD    L PGCT      ADD ONE TO PAGE NO.          BOUT0770
00B6 0  80DF                A       ONE                                    BOUT0775
00B7 00 D400020B            STO   L PGCT                                   BOUT0780
00B9 0  61FD                LDX   1 -3        ZERO SUPPRESS PAGE NO.       BOUT0785
00BA 01 C50000EE    ZLP     LD    L1 PBUF+4                                BOUT0790
00BC 01 4C2000C3            BNZ     ZSP                                    BOUT0795
00BE 0  C0DF                LD      BL                                     BOUT0800
00BF 01 D50000EE            STO   L1 PBUF+4                                BOUT0805
00C1 0  7101                MDX   1 1                                      BOUT0810
00C2 0  70F7                B       ZLP                                    BOUT0815
00C3 01 C40000EB    ZSP     LD    L PBUF+1    PACK CHARS INTO LINE         BOUT0820
00C5 0  1008                SLA     8                                      BOUT0825
00C6 01 EC0000EC            OR    L PBUF+2                                 BOUT0830
00C8 00 D4000238            STO   L PGNO                                   BOUT0835
00CA 01 C40000ED            LD    L PBUF+3                                 BOUT0840
00CC 0  1008                SLA     8                                      BOUT0845
00CD 01 EC0000EE            OR    L PBUF+4                                 BOUT0850
00CF 00 D4000239            STO   L PGNO+1                                 BOUT0855
00D1 00 6500020C            LDX   L1 HDNG                                  BOUT0860
00D3 0  69C7                STX   1 LAD                                    BOUT0865
00D4 0  C0C1                LD      ONE                                    BOUT0870
00D5 0  18D0                XCH                                            BOUT0875
00D6 0  C0BF                LD      ONE                                    BOUT0880
00D7 0  D8BC                STD     PACKD     PACKED INPUT                 BOUT0885
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00D8 01 4400002D          BSI  L  PRL                                  BOUT0890
00DA 01 65000099          LDX  L1 EOS                                  BOUT0895
00DC 0  69BE              STX   1 LAD                                  BOUT0900
00DD 0  10A0              SLT     32                                   BOUT0905
00DE 0  D8B5              STD     PACKD      UNPACKED INPUT            BOUT0910
00DF 01 4400002D          BSI  L  PRL                                  BOUT0915
00E1 0  1810              SRA     16         CLEAR OVERFLOW SWITCH     BOUT0920
00E2 00 D4000205          STO  L  PGOF                                 BOUT0925
00E4 00 65000000     PX1  LDX  L1 *-*                                  BOUT0930
00E6 00 66000000     PX2  LDX  L2 *-*        RESTORE XR2               BOUT0935
00E8 01 4C8000A0          B    I  PHEAD                                BOUT0940
00EA 0  0000         PRUF DC      *-*                                  BOUT0945
00EB    003C              BSS     60                                   BOUT0950
                     * PRINTER CODE TABLE                              BOUT0955
                     * CONSOLE PRINTER CODE IN BITS 0-7                BOUT0960
                     * 1403 CODE IN BITS 8-15                          BOUT0965
0127 0  C449         CTBL DC      /C449      0                         BOUT0970
0128 0  FC40              DC      /FC40      1                         BOUT0975
0129 0  D801              DC      /D801      2                         BOUT0980
012A 0  DC02              DC      /DC02      3                         BOUT0985
012B 0  F043              DC      /F043      4                         BOUT0990
012C 0  F404              DC      /F404      5                         BOUT0995
012D 0  D045              DC      /D045      6                         BOUT1000
012E 0  D446              DC      /D446      7                         BOUT1005
012F 0  E407              DC      /E407      8                         BOUT1010
0130 0  E008              DC      /E008      9                         BOUT1015
0131 0  3C64              DC      /3C64      A                         BOUT1020
0132 0  1825              DC      /1825      B                         BOUT1025
0133 0  1C26              DC      /1C26      C                         BOUT1030
0134 0  3067              DC      /3067      D                         BOUT1035
0135 0  3468              DC      /3468      E                         BOUT1040
0136 0  1029              DC      /1029      F                         BOUT1045
0137 0  142A              DC      /142A      G                         BOUT1050
0138 0  246B              DC      /246B      H                         BOUT1055
0139 0  202C              DC      /202C      I                         BOUT1060
013A 0  7C5B              DC      /7C5B      J                         BOUT1065
013B 0  5819              DC      /5819      K                         BOUT1070
013C 0  5C1A              DC      /5C1A      L                         BOUT1075
013D 0  705B              DC      /705B      M                         BOUT1080
013E 0  741C              DC      /741C      N                         BOUT1085
013F 0  505D              DC      /505D      O                         BOUT1090
0140 0  545E              DC      /545E      P                         BOUT1095
0141 0  641F              DC      /641F      Q                         BOUT1100
0142 0  6020              DC      /6020      R                         BOUT1105
0143 0  980D              DC      /980D      S                         BOUT1110
0144 0  9C0E              DC      /9C0E      T                         BOUT1115
0145 0  B04F              DC      /B04F      U                         BOUT1120
0146 0  B410              DC      /B410      V                         BOUT1125
0147 0  9051              DC      /9051      W                         BOUT1130
0148 0  9452              DC      /9452      X                         BOUT1135
0149 0  A413              DC      /A413      Y                         BOUT1140
014A 0  A054              DC      /A054      Z                         BOUT1150
014B 0  DA6D              DC      /DA6D      +                         BOUT1155
014C 0  8461              DC      /8461      -                         BOUT1160
014D 0  BC4C              DC      /BC4C      /                         BOUT1165
014E 0  D623              DC      /D623      *                         BOUT1170
014F 0  C24A              DC      /C24A      =                         BOUT1175
0150 0  FE57              DC      /FE57      (                         BOUT1180
0151 0  F62F              DC      /F62F      )
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0152 0  006E                DC      /006E     .                          BOUT1185
0153 0  8016                DC      /8016     .                          BOUT1190
0154 0  E60B                DC      /E60B     '                          BOUT1195
0155 0  4415                DC      /4415     +                          BOUT1200
0156 0  4062                DC      /4062     $                          BOUT1205
0157 0  217F                DC      /217F     BLANK                      BOUT1210
0158 0  D216                DC      /D216     SEMI-COLON                 BOUT1215
0159 0  0031         TL     DC      *-CTBL-2                             BOUT1220
                     * PRINTER ERROR ROUTINE                             BOUT1225
015A 0  0000         PERR   DC      *-*                                  BOUT1230
015B 0  F009                EOR     FOUR                                 BOUT1235
015C 01 4CA0015A            BNZ  I  PERR                                 BOUT1240
015E 01 C4000096            LD   L  ONE                                  BOUT1245
0160 00 D4000205            STO  L  PGOF      SET PAGE OVERFLOW ON       BOUT1250
0162 0  1810                SRA     16                                   BOUT1255
0163 01 4C80015A            B    I  PERR                                 BOUT1260
0165 0  0004         FOUR   DC      4         TEST FOR CHAN 12           BOUT1265
0166                        END                                          BOUT1270

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   067 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                   BOUT1275

*DELETE              BOUT                                                BOUT1280
CART ID 0001   DB ADDR  3696   DB CNT   0013

*STORE       WS  UA  BOUT                                                BOUT1285
CART ID 0001   DB ADDR  3A15   DB CNT   0013

// EJECT
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```
// ASM
*LIST
*SYSTEM SYMBOL TABLE
0009     03584140          ENT      CODE      PRINTS SYMBOLIC INFO
0000     03584141          ENT      CODEA     PRINTS ONLY BYTE ENTERED
0000 0   0000        CODEA DC       *-*
0001 01  D40000AC          STO   L  T         SAVE THE INPUT BYTE
0003 0   1810              SRA      16
0004 0   D003              STO      CT        SET SWITCH TO IND CODEA
0005 0   C0FA              LD       CODEA
0006 0   D002              STO      CODE      SET RETURN
0007 0   7005              B        COMN      GO TO COMMON CODE
0008 0   0000        CT    DC       0         SWITCH
                     *
0009 0   0000        CODE  DC       *-*
000A 0   68FD              STX      CT        SET SWITCH TO CODE
000B 01  D40000AC          STO   L  T         SAVE BYTE
000D 01  C40000AC    COMN  LD    L  T         GET BYTE ENTERED
000F 00  74000208          MDM   L  LFRT,0    IS THIS LEFT OR RIGHT
0011 0   7008              B        RT        RIGHT ONE
0012 00  74010207          MDM   L  LREC,1    LEFT, SO ADD ONE TO LENGTH
0014 00  74010208          MDM   L  LFRT,1    SET TO RIGHT FOR NEXT TIME
0016 0   1008              SLA      8         POSITION BYTE
0017 00  D4800206          STO   I  SREC       AND STORE IT
0019 0   7009              B        COMNA     GO ON
001A 00  74FF0208    RT    MDM   L  LFRT,-1   SET TO LEFT FOR NEXT TIME
001C 0   1000              NOP                BECAUSE OF SKIP
001D 00  EC800206          OR    I  SREC      OR WITH LEFT BYTE
001F 00  D4800206          STO   I  SREC      AND STORE
0021 00  74010206          MDM   L  SREC,1    POINT TO NEXT WORD
0023 01  C40000AC    COMNA LD    L  T         GET BYTE
0025 0   692D              STX    1 XR1+1
0026 00  74000203          MDM   L  DBUG,0
0028 0   7029              B        XR1
0029 0   1888              SRT      8         SAVE TWO HEX DIGITS
002A 0   61FE              LDX    1 -2        SET UP TO CONVERT 2 DIGITS
002B 0   1810        KP    SRA      16
002C 0   1084              SLT      4
002D 01  D50000B0          STO   L1 PA+2
002F 0   7101              MDX    1 1
0030 0   70FA              B        KP
0031 01  74000008          MDM   L  CT,0      WAS CODEA ENTERED
0033 0   7004              B        *+4       NO
0034 0   C04E              LD       H003F
0035 01  D40000B2          STO   L  AREA
0037 0   7017              B        PRINT
0038 01  658000AC          LDX   I1 T
003A 0   71C1              MDX    1 -63
003B 0   701B              B        LOOK
003C 0   7100              MDX    1 0         CHECK FOR EOS
003D 0   7002              B        *+2
003E 01  4C0000A3          B     L  EOS
0040 0   713F              MDX    1 63
0041 0   1000              NOP
0042 01  C50000C5          LD    L1 ATAB
0044 0   1888              SRT      8
0045 0   E03D              AND      H003F
0046 01  D40000B2          STO   L  AREA
0048 0   1088              SLT      8
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0049 0  E039                AND      H003F                                CODE0300
004A 01 D40000B3            STO   L  AREA+1                               CODE0305
004C 0  C036                LD       H003F                                CODE0310
004D 01 D40000B4            STO   L  AREA+2                               CODE0315
004F 0  C05D         PRINT  LD       ARAD                                 CODE0320
0050 30 025A48C0            CALL     BOUT                                 CODE0325
0052 00 6500000C     XR1    LDX   L1 *-*                                  CODE0330
0054 0  C057                LD       T                                    CODE0335
0055 01 4C800009            B     I  CODE                                 CODE0340
0057 00 65800209     LOOK   LDX   I1 UAD                                  CODE0345
0059 01 C40000AC            LD    L  T                                    CODE0350
005B 0  901A                S        K63                                  CODE0355
005C 0  A01A                M        K6                                   CODE0360
005D 0  1090                SLT      16                                   CODE0365
005E 0  D019                STO      TEM                                  CODE0370
005F 0  C103                LD     1 PGO                                  CODE0375
0060 0  9017                S        TEM                                  CODE0380
0061 00 84000209            A     L  UAD                                  CODE0385
0063 0  D014                STO      TEM                                  CODE0390
0064 01 65800078            LDX   I1 TEM                                  CODE0395
0066 0  C101                LD     1 1                                    CODE0400
0067 01 4C040079            BOD      VAR                                  CODE0405
0069 0  1801                SRA      1                                    CODE0410
006A 01 4C040084            BOD      CONS                                 CODE0415
006C 0  1801                SRA      1                                    CODE0420
006D 01 4C0400D9            BOD      STNO                                 CODE0425
006F 0  1801                SRA      1                                    CODE0430
0070 01 4C040096            BOD      FCN                                  CODE0435
0072 0  6119                LDX    1 25                                   CODE0440
0073 30 02159640            CALL     BERR                                 CODE0445
0075 0  6040                LDX      /40                                  CODE0450
0076 0  003F         K63    DC       63                                   CODE0455
0077 0  0006         K6     DC       6                                    CODE0460
0078    0001         TEM    BSS      1                                    CODE0465
0079 0  C105         VAR    LD     1 5                                    CODE0470
007A 0  1888                SRT      8                                    CODE0475
007B 0  E007                AND      H003F                                CODE0480
007C 0  D035                STO      AREA                                 CODE0485
007D 0  1088                SLT      8                                    CODE0490
007E 0  E004                AND      H003F                                CODE0495
007F 0  D033                STO      AREA+1                               CODE0500
0080 0  C002                LD       H003F                                CODE0505
0081 0  D032                STO      AREA+2                               CODE0510
0082 0  70CC                B        PRINT                                CODE0515
0083 0  003F         H003F  DC       /3F                                  CODE0520
0084 20 058A3580     CONS   LIBF     ESTO                                 CODE0525
0085 1  00C2                DC       ET                                   CODE0530
0086 0  7102                MDX    1 2                                    CODE0535
0087 0  6901                STX    1 CAD                                  CODE0540
0088 20 054C4000            LIBF     ELD                                  CODE0545
0089 0  0000         CAD    DC       *-*                                  CODE0550
008A 30 030D6540            CALL     CCON      CONVERT CONSTANT           CODE0555
008C 1  00B2                DC       AREA                                 CODE0560
008D 0  D001                STO      *+1                                  CODE0565
008E 00 65000000            LDX   L1 *-*                                  CODE0570
0090 0  C0F2                LD       H003F                                CODE0575
0091 01 D50000B2            STO   L1 AREA                                 CODE0580
0093 20 054C4000            LIBF     ELD                                  CODE0585
```

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0094 1  00C2                DC      FT                                  CODE0590
0095 0  70B9                B       PRINT                               CODE0595
0096 0  C104        FCN     LD    1 4                                   CODE0600
0097 0  1888                SRT     8                                   CODE0605
0098 0  E0EA                AND     H003F                               CODE0610
0099 0  D018                STO     AREA                                CODE0615
009A 0  1088                SLT     8                                   CODE0620
009B 0  E0E7                AND     H003F                               CODE0625
009C 0  D016                STO     AREA+1                              CODE0630
009D 0  C105                LD    1 5                                   CODE0635
009E 0  1808                SRA     8                                   CODE0640
009F 0  D014                STO     AREA+2                              CODE0645
00A0 0  C0E2                LD      H003F                               CODE0650
00A1 0  D013                STO     AREA+3                              CODE0655
00A2 0  70AC                B       PRINT                               CODE0660
00A3 0  C032        EOS     LD      ES                                  CODE0665
00A4 0  D00D                STO     AREA                                CODE0670
00A5 0  C031                LD      ES+1                                CODE0675
00A6 0  D00C                STO     AREA+1                              CODE0680
00A7 0  C030                LD      ES+2                                CODE0685
00A8 0  D00B                STO     AREA+2                              CODE0690
00A9 0  C0D9                LD      H003F                               CODE0695
00AA 0  D00A                STO     AREA+3                              CODE0700
00AB 0  70A3                B       PRINT                               CODE0705
00AC 0  0000        T       DC      0                                   CODE0710
00AD 1  00AE        ARAD    DC      *                                   CODE0715
00AE    0002        PA      BSS     2                                   CODE0720
00B0 0  0030                DC      /30                                 CODE0725
00B1 0  0030                DC      /30                                 CODE0730
00B2    0010        AREA    BSS     16                                  CODE0735
00C2    0003        ET      BSS     3                                   CODE0740
00C5 0  2430        ATAB    DC      /2430                               CODE0745
00C6 0  2530                DC      /2530                               CODE0750
00C7 0  2630                DC      /2630                               CODE0755
00C8 0  2730                DC      /2730                               CODE0760
00C9 0  2727                DC      /2727                               CODE0765
00CA 0  251E                DC      /251E                               CODE0770
00CB 0  2C30                DC      /2C30                               CODE0775
00CC 0  0F17                DC      /0F17                               CODE0780
00CD 0  3030                DC      /3030                               CODE0785
00CE 0  3030                DC      /3030                               CODE0790
00CF 0  2830                DC      /2830                               CODE0795
00D0 0  0E1A                DC      /0E1A     EQ                        CODE0800
00D1 0  170E                DC      /170E     NE                        CODE0805
00D2 0  101D                DC      /101D     GT                        CODE0810
00D3 0  100E                DC      /100E     GE                        CODE0815
00D4 0  151D                DC      /151D     LT                        CODE0820
00D5 0  150E                DC      /150E     LE                        CODE0825
00D6 0  000E        ES      DC      /E                                  CODE0830
00D7 0  0018                DC      /18                                 CODE0835
00D8 0  001C                DC      /1C                                 CODE0840
                    * STATEMENT NUMBER                                  CODE0845
00D9 0  C102        STNO    LD    1 2                                   CODE0850
00DA 0  1890                SRT     16        READY TO CONVERT TO DECIMAL CODE0855
00DB 0  A815                D       K10                                 CODE0860
00DC 0  18D0                XCH                                         CODE0865
00DD 01 D40000B5            STO   L AREA+3                              CODE0870
00DF 0  1810                SRA     16                                  CODE0875
00E0 0  A810                D       K10                                 CODE0880
```

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00E1 0  18D0                XCH                                    CODE0885
00E2 01 D40000B4            STO  L  AREA+2                         CODE0890
00E4 0  1810                SRA     16                             CODE0895
00E5 0  A80B                D       K10                            CODE0900
00E6 01 D40000B2            STO  L  AREA                           CODE0905
00E8 0  18D0                XCH                                    CODE0910
00E9 01 D40000B3            STO  L  AREA+1                         CODE0915
00EB 01 C4000083            LD   L  H003F                          CODE0920
00ED 01 D40000B6            STO  L  AREA+4                         CODE0925
00EF 01 4C00004F            B    L  PRINT                          CODE0930
00F1 0  000A         K10    DC      10                             CODE0935
00F2                        END                                    CODE0940

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   054 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                             CODE0945

*DELETE              CODE                                          CODE0950
CART ID 0001   DB ADDR  3696   DB CNT   000E

*STORE       WS  UA  CODE                                          CODE0955
CART ID 0001   DB ADDR  3A18   DB CNT   000E

// EJECT
```

```
// ASM                                                                  BSID0005
*LIST                                                                   BSID0010
*SYSTEM SYMBOL TABLE                                                    BSID0015
                        * ROUTINE TO IDENTIFY STATEMENT TYPE            BSID0020
                        * RETURN IN ACC IS NUMBER OF STATEMNT           BSID0025
                        * NEGATIVE 1 IS RETURNED IF STATEMENT NOT FOUND BSID0030
0000     02889100             ENT      BSID                              BSID0035
0000 0   0000          BSID   DC       *-*                               BSID0040
0001 0   692A                 STX    1 XR1+1      SAVE INDEX REGISTER 1  BSID0045
0002 0   6A2B                 STX    2 XR2+1      SAVE INDEX REGISTER 2  BSID0050
0003 0   1810                 SRA      16                                BSID0055
0004 0   D02E                 STO      STYP       INITIALIZE STYP        BSID0060
0005 01  66000040             LDX   L2 SLIST      START OF KEYWORD LIST  BSID0065
0007 00  65800200      BS1    LDX   I1 LP                               BSID0070
0009 0   C200                 LD     2 0          GET LNGTH OF KEYWD IN LIST BSID0075
000A 01  4C180026             BZ       BS99       ZERO = END OF LIST     BSID0080
000C 0   D025                 STO      NC         SAVE KEYWD LENGTH      BSID0085
000D 0   D014                 STO      MX2+1      SAVE FOR INCREMENTING  BSID0090
000E 0   7201                 MDX    2 1          1ST CHAR OF KEYWD      BSID0095
000F 0   6A10                 STX    2 RX2+1      SAVE POINTER FOR LATER BSID0100
0010 0   C100          BS5    LD     1 0          LOAD KEYWD CHAR FROM STMNT BSID0105
0011 0   F200                 EOR    2 0          COMPARE WITH CHAR FROM LIST BSID0110
0012 01  4C20001F             BNZ      RX2        BRANCH IF NOT EQUAL    BSID0115
0014 0   7101                 MDX    1 1          TRY NEXT CHAR          BSID0120
0015 0   7201                 MDX    2 1                                 BSID0125
0016 01  74FF0032             MDM   L  NC,-1       ANY CHARS LEFT         BSID0130
0018 0   70F7                 B        BS5        YES, TRY AGAIN         BSID0135
0019 00  6D000200             STX   L1 LP         NO, WE GOT IT          BSID0140
001B 30  071630C0             CALL     GETC       GET CHAR AFTER KEYWD   BSID0145
001D 0   C015                 LD       STYP       LOAD STMNT TYPE        BSID0150
001E 0   700C                 B        XR1                               BSID0155
001F 00  66000000      RX2    LDX   L2 *-*        RESTORE XR2            BSID0160
0021 00  76000000      MX2    MDX   L2 *-*        INCREASE XR2           BSID0165
0023 01  74010033             MDM   L  STYP,1      INCREASE STMNT TYPE    BSID0170
0025 0   70E1                 B        BS1        TRY NEXT KEYWORD       BSID0175
0026 0   C100          BS99   LD     1 0          GET CHAR               BSID0180
0027 0   F016                 EOR      EOS        IS IT END-OF-STMNT     BSID0185
0028 01  4C200034             BNZ      BS100      NO                     BSID0190
002A 0   C006                 LD       M1         YES, ILLEGAL STATEMENT BSID0195
002B 00  65000000      XR1    LDX   L1 *-*        RESTORE XR1            BSID0200
002D 00  66000000      XR2    LDX   L2 *-*        RESTORE XR2            BSID0205
002F 01  4C800000             B     I  BSID        AND RETURN             BSID0210
0031 0   FFFF          M1     DC       -1                                BSID0215
0032 0   0000          NC     DC       0                                 BSID0220
0033 0   0000          STYP   DC       0                                 BSID0225
0034 0   C100          BS100  LD     1 0          GET CHAR               BSID0230
0035 0   F009                 EOR      EQL        IS IT =                BSID0235
0036 01  4C18003A             BZ       BS101      YES, SO CALL IT LET STMNT BSID0240
0038 0   7101                 MDX    1 1          NO, SO MOVE POINTER    BSID0245
0039 0   70EC                 B        BS99       AND TRY NEXT CHAR      BSID0250
003A 30  071630C0      BS101  CALL     GETC       GET 1ST CHAR OF STATEMENT BSID0255
003C 0   1810                 SRA      16         SET TO TYPE OF LET STMNT BSID0260
003D 0   70ED                 B        XR1        RETURN                 BSID0265
003E 0   003F          EOS    DC       /3F        END-OF-STATEMENT       BSID0270
003F 0   0028          EQL    DC       /28        = SIGN                 BSID0275
                       * LIST OF STATEMENT KEYWORDS IN INTERNAL CODE    BSID0280
0040                   SLIST  EQU      *                                 BSID0285
                       * LET                                             BSID0290
0040 0   0003                 DC       3                                 BSID0295
```

```
0041 0  0015          DC      /15                    BSID0300
0042 0  000E          DC      /0E                    BSID0305
0043 0  001D          DC      /1D                    BSID0310
                * PRINT                              BSID0315
0044 0  0005          DC      5                      BSID0320
0045 0  0019          DC      /19                    BSID0325
0046 0  001B          DC      /1B                    BSID0330
0047 0  0012          DC      /12                    BSID0335
0048 0  0017          DC      /17                    BSID0340
0049 0  001D          DC      /1D                    BSID0345
                * READ                               BSID0350
004A 0  0004          DC      4                      BSID0355
004B 0  001B          DC      /1B                    BSID0360
004C 0  000E          DC      /0E                    BSID0365
004D 0  000A          DC      /0A                    BSID0370
004E 0  000D          DC      /0D                    BSID0375
                * GOTO                               BSID0380
004F 0  0004          DC      4                      BSID0385
0050 0  0010          DC      /10                    BSID0390
0051 0  0018          DC      /18                    BSID0395
0052 0  001D          DC      /1D                    BSID0400
0053 0  0018          DC      /18                    BSID0405
                * IF                                 BSID0410
0054 0  0002          DC      2                      BSID0415
0055 0  0012          DC      /12                    BSID0420
0056 0  000F          DC      /0F                    BSID0425
                * FOR                                BSID0430
0057 0  0003          DC      3                      BSID0435
0058 0  000F          DC      /0F                    BSID0440
0059 0  0018          DC      /18                    BSID0445
005A 0  001B          DC      /1B                    BSID0450
                * NEXT                               BSID0455
005B 0  0004          DC      4                      BSID0460
005C 0  0017          DC      /17                    BSID0465
005D 0  000E          DC      /0E                    BSID0470
005E 0  0021          DC      /21                    BSID0475
005F 0  001D          DC      /1D                    BSID0480
                * REM                                BSID0485
0060 0  0003          DC      3                      BSID0490
0061 0  001B          DC      /1B                    BSID0495
0062 0  000E          DC      /0E                    BSID0500
0063 0  0016          DC      /16                    BSID0505
                * GOSUB                              BSID0510
0064 0  0005          DC      5                      BSID0515
0065 0  0010          DC      /10                    BSID0520
0066 0  0018          DC      /18                    BSID0525
0067 0  001C          DC      /1C                    BSID0530
0068 0  001E          DC      /1E                    BSID0535
0069 0  000B          DC      /0B                    BSID0540
                * RETURN                             BSID0545
006A 0  0006          DC      6                      BSID0550
006B 0  001B          DC      /1B                    BSID0555
006C 0  000E          DC      /0E                    BSID0560
006D 0  001D          DC      /1D                    BSID0565
006E 0  001E          DC      /1E                    BSID0570
006F 0  001B          DC      /1B                    BSID0575
0070 0  0017          DC      /17                    BSID0580
                * DIM                                BSID0585
0071 0  0003          DC      3                      BSID0590
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0072 0  000D                DC      /0D                                BSID0595
0073 0  0012                DC      /12                                BSID0600
0074 0  0016                DC      /16                                BSID0605
                     * DEF                                             BSID0610
0075 0  0003                DC      3                                  BSID0615
0076 0  000D                DC      /0D                                BSID0620
0077 0  000E                DC      /0E                                BSID0625
0078 0  000F                DC      /0F                                BSID0630
                     * STOP                                            BSID0635
0079 0  0004                DC      4                                  BSID0640
007A 0  001C                DC      /1C                                BSID0645
007B 0  001D                DC      /1D                                BSID0650
007C 0  0018                DC      /18                                BSID0655
007D 0  0019                DC      /19                                BSID0660
                     * END                                             BSID0665
007E 0  0003                DC      3                                  BSID0670
007F 0  000E                DC      /0E                                BSID0675
0080 0  0017                DC      /17                                BSID0680
0081 0  000D                DC      /0D                                BSID0685
                     * ON                                              BSID0690
0082 0  0002                DC      2                                  BSID0695
0083 0  0018                DC      /18                                BSID0700
0084 0  0017                DC      /17                                BSID0705
                     * VOID STATEMENT                                   BSID0710
0085 0  0001                DC      1                                  BSID0715
0086 0  003F                DC      /3F                                BSID0720
                     * DEBUG                                           BSID0725
0087 0  0005                DC      5                                  BSID0730
0088 0  000D                DC      /0D                                BSID0735
0089 0  000E                DC      /0E                                BSID0740
008A 0  000B                DC      /0B                                BSID0745
008B 0  001E                DC      /1E                                BSID0750
008C 0  0010                DC      /10                                BSID0755
                     * TYPE                                            BSID0760
008D 0  0004                DC      4                                  BSID0765
008E 0  001D                DC      /1D        T                       BSID0770
008F 0  0022                DC      /22        Y                       BSID0775
0090 0  0019                DC      /19        P                       BSID0780
0091 0  000E                DC      /0E        E                       BSID0785
                     * PAGE                                            BSID0790
0092 0  0004                DC      4                                  BSID0795
0093 0  0019                DC      /19        P                       BSID0800
0094 0  000A                DC      /0A        A                       BSID0805
0095 0  0010                DC      /10        G                       BSID0810
0096 0  000E                DC      /0E        E                       BSID0815
                     * END OF STATEMENT KEYWORD LIST                    BSID0820
0097 0  0000                DC      0                                  BSID0825
0098                        END                                        BSID0830

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   042 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                 BSID0835

*DELETE              BSID                                             BSID0840
CART ID 0001   DB ADDR  3696   DB CNT   000A
```

```
*STORE        WS  UA  BSID                                          BSID0845
CART ID 0001   DB ADDR  3A26   DB CNT   000A

// EJECT
```

```
// ASM                                                                  BERR0005
*LIST                                                                   BERR0010
*SYSTEM SYMBOL TABLE                                                    BERR0015
0000     02159640          ENT      BERR                                BERR0020
0000 0   0000        BERR  DC       *-*                                 BERR0025
0001 0   6A36              STX    2 BXR2+1    SAVE INDEX REG 2           BERR0030
0002 01  C500009A          LD    L1 ETAB      GET PTR TO ERROR MESSAGE   BERR0035
0004 0   D001              STO      *+1                                 BERR0040
0005 00  65000000          LDX   L1 *-*       POINTER IS IN XR1          BERR0045
0007 0   C100              LD     1 0         LOAD FLAGS AND MSG LENGTH  BERR0050
0008 0   D035              STO      FLAGS                               BERR0055
0009 0   1808              SRA      8                                   BERR0060
000A 0   D032              STO      MSGL      SAVE MESSAGE LENGTH        BERR0065
000B 01  66000044          LDX   L2 EM                                  BERR0070
000D 0   C101        MVM   LD     1 1         MOVE MESSAGE INTO LINE     BERR0075
000E 0   D200              STO    2 0                                   BERR0080
000F 0   7101              MDX    1 1                                   BERR0085
0010 0   7201              MDX    2 1                                   BERR0090
0011 01  74FF003D          MDM   L  MSGL,-1                             BERR0095
0013 0   70F9              B        MVM                                 BERR0100
0014 0   C029              LD       FLAGS     GET FLAGS                  BERR0105
0015 01  4C040018          BOD      *+1       SHOULD LINE NO. BE IN MESS. BERR0110
0017 0   7014              B        MND       NO                         BERR0115
0018 0   61FB              LDX    1 -5        YES                        BERR0120
0019 01  C5000082    MVL   LD    L1 INLIN+5   MOVE 'IN LINE' CHARS       BERR0125
001B 0   D200              STO    2 0                                   BERR0130
001C 0   7201              MDX    2 1                                   BERR0135
001D 0   7101              MDX    1 1                                   BERR0140
001E 0   70FA              B        MVL                                 BERR0145
001F 00  C40001FF          LD    L  LNUM      GET LINE NO.               BERR0150
0021 0   4060              BSI      CVT       CONVERT AND PLACE IN LINE  BERR0155
0022 00  740001FF          MDM   L  LNINC,0   IF INCR=0, DO NOT PRINT IT BERR0160
0024 0   7001              B        *+1                                 BERR0165
0025 0   7006              B        MND                                 BERR0170
0026 0   C014              LD       PLUS                                BERR0175
0027 0   D200              STO    2 0                                   BERR0180
0028 0   7201              MDX    2 1                                   BERR0185
0029 00  C40001FF          LD    L  LNINC     GET INCREMENT              BERR0190
002B 0   4056              BSI      CVT                                 BERR0195
002C 0   C012        MND   LD       LNND      GET LINE END SIGNAL        BERR0200
002D 0   D200              STO    2 0         PUT INTO LINE              BERR0205
002E 0   C011              LD       LNAD      GET LINE ADDRESS           BERR0210
002F 30  025A48D7          CALL     BOUTP     PRINT THE LINE             BERR0215
0031 0   C00C              LD       FLAGS                               BERR0220
0032 0   E009              AND      MASK                                BERR0225
0033 00  EC00023B          OR    L  ERSW      SET ERROR SWITCH           BERR0230
0035 00  D400023B          STO   L  ERSW                                BERR0235
0037 00  66000000    BXR2  LDX   L2 *-*                                 BERR0240
0039 01  4C800000          B     I  BERR                                BERR0245
003B 0   3024        PLUS  DC       /3024     BLANK-PLUS                 BERR0250
003C 0   00FE        MASK  DC       /FE                                 BERR0255
003D 0   0000        MSGL  DC       0                                   BERR0260
003E 0   0000        FLAGS DC       0                                   BERR0265
003F 0   3F30        LNND  DC       /3F30                               BERR0270
0040 1   0041        LNAD  DC       *                                   BERR0275
0041 0   2727              DC       /2727     **                         BERR0280
0042 0   2727              DC       /2727     **                         BERR0285
0043 0   2730              DC       /2730     * BLANK                    BERR0290
0044     0039        EM    BSS      57                                  BERR0295
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007D 0  3012        INLIN DC      /3012      I                    BERR0300
007E 0  1730              DC      /1730      N                    BERR0305
007F 0  1512              DC      /1512      LI                   BERR0310
0080 0  170E              DC      /170E      NE                   BERR0315
0081 0  3030              DC      /3030                           BERR0320
0082 0  0000        CVT   DC      *-*                             BERR0325
0083 0  1890              SRT     16                              BERR0330
0084 0  A815              D       K10                             BERR0335
0085 0  18D0              XCH                                     BERR0340
0086 0  D012              STO     T                               BERR0345
0087 0  1810              SRA     16                              BERR0350
0088 0  A811              D       K10                             BERR0355
0089 0  18D0              XCH                                     BERR0360
008A 0  1008              SLA     8                               BERR0365
008B 0  E80D              OR      T                               BERR0370
008C 0  D201              STO   2 1                               BERR0375
008D 0  1810              SRA     16                              BERR0380
008E 0  A80B              D       K10                             BERR0385
008F 0  4818              SKP     +-                              BERR0390
0090 0  C0AE              LD      LNND                            BERR0395
0091 0  1008              SLA     8                               BERR0400
0092 0  D006              STO     T                               BERR0405
0093 0  18D0              XCH                                     BERR0410
0094 0  E804              OR      T                               BERR0415
0095 0  D200              STO   2 0                               BERR0420
0096 0  7202              MDX   2 2                               BERR0425
0097 01 4C800082          B     I CVT                             BERR0430
0099 0  0000        T     DC      0                               BERR0435
009A 0  000A        K10   DC      10                              BERR0440
009A                ETAB  EQU     *-1                             BERR0445
009B 1  00FA              DC      ER05      01                    BERR0450
009C 1  00FA              DC      ER05      02                    BERR0455
009D 1  0105              DC      ER06      03                    BERR0460
009E 1  011A              DC      ER08      04                    BERR0465
009F 1  00E8              DC      ER03      05                    BERR0470
00A0 1  00E8              DC      ER03      06                    BERR0475
00A1 1  011A              DC      ER08      07                    BERR0480
00A2 1  01DD              DC      ERR       08                    BERR0485
00A3 1  00E8              DC      ER03      09                    BERR0490
00A4 1  00F1              DC      ER04      10                    BERR0495
00A5 1  011A              DC      ER08      11                    BERR0500
00A6 1  018A              DC      ER18      12                    BERR0505
00A7 1  011A              DC      ER08      13                    BERR0510
00A8 1  0141              DC      ER12      14                    BERR0515
00A9 1  011A              DC      ER08      15                    BERR0520
00AA 1  01DD              DC      ERR       16                    BERR0525
00AB 1  01DD              DC      ERR       17                    BERR0530
00AC 1  01DD              DC      ERR       18                    BERR0535
00AD 1  00E8              DC      ER03      19                    BERR0540
00AE 1  01DD              DC      ERR       20                    BERR0545
00AF 1  01A4              DC      ER20      21                    BERR0550
00B0 1  0135              DC      ER11      22                    BERR0555
00B1 1  0163              DC      ER15      23                    BERR0560
00B2 1  01A4              DC      ER20      24                    BERR0565
00B3 1  01A4              DC      ER20      25                    BERR0570
00B4 1  0196              DC      ER19      26                    BERR0575
00B5 1  00DF              DC      ER02      27                    BERR0580
00B6 1  0111              DC      ER07      28                    BERR0585
00B7 1  01DD              DC      ERR       29                    BERR0590
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00B8 1  00E8          DC    ER03    30                    BERR0595
00B9 1  00E8          DC    ER03    31                    BERR0600
00BA 1  00E8          DC    ER03    32                    BERR0605
00BB 1  01A4          DC    ER20    33                    BERR0610
00BC 1  00E8          DC    ER03    34                    BERR0615
00BD 1  00E8          DC    ER03    35                    BERR0620
00BE 1  00E8          DC    ER03    36                    BERR0625
00BF 1  018A          DC    ER18    37                    BERR0630
00C0 1  018A          DC    ER18    38                    BERR0635
00C1 1  01DD          DC    ERR     39                    BERR0640
00C2 1  0163          DC    ER15    40                    BERR0645
00C3 1  01D3          DC    ER35    41                    BERR0650
00C4 1  01DD          DC    ERR     42                    BERR0655
00C5 1  01EE          DC    ER38    43                    BERR0660
00C6 1  016E          DC    ER16    44                    BERR0665
00C7 1  01B2          DC    ER22    45                    BERR0670
00C8 1  0153          DC    ER14    46                    BERR0675
00C9 1  012B          DC    ER10    47                    BERR0680
00CA 1  01E1          DC    ER37    48                    BERR0685
00CB 1  01DD          DC    ERR     49                    BERR0690
00CC 1  01DD          DC    ERR     50                    BERR0695
00CD 1  01C6          DC    ER24    51                    BERR0700
00CE 1  01BB          DC    ER23    52                    BERR0705
00CF 1  01DD          DC    ERR     53                    BERR0710
00D0 1  01DD          DC    ERR     54                    BERR0715
00D1 1  01AB          DC    ER21    55                    BERR0720
00D2 1  0122          DC    ER09    56                    BERR0725
00D3 1  00D5          DC    ER39    OPERATOR INTERRUPT    BERR0730
00D4 1  014A          DC    ER13    58                    BERR0735
00D5 0  0911    ER39  DC    /0911                         BERR0740
00D6 0  1819          DC    /1819   OP                    BERR0745
00D7 0  0E1B          DC    /0E1B   ER                    BERR0750
00D8 0  0A1D          DC    /0A1D   AT                    BERR0755
00D9 0  181B          DC    /181B   OR                    BERR0760
00DA 0  3012          DC    /3012    I                    BERR0765
00DB 0  171D          DC    /171D   NT                    BERR0770
00DC 0  0E1B          DC    /0E1B   ER                    BERR0775
00DD 0  1B1E          DC    /1B1E   RU                    BERR0780
00DE 0  191D          DC    /191D   PT                    BERR0785
00DF 0  0810    ER02  DC    /0810                         BERR0790
00E0 0  1215          DC    /1215   IL                    BERR0795
00E1 0  150E          DC    /150E   LE                    BERR0800
00E2 0  100A          DC    /100A   GA                    BERR0805
00E3 0  1530          DC    /1530   L                     BERR0810
00E4 0  0C18          DC    /0C18   CO                    BERR0815
00E5 0  171C          DC    /171C   NS                    BERR0820
00E6 0  1D0A          DC    /1D0A   TA                    BERR0825
00E7 0  171D          DC    /171D   NT                    BERR0830
00E8 0  0810    ER03  DC    /0810                         BERR0835
00E9 0  1215          DC    /1215   IL                    BERR0840
00EA 0  150E          DC    /150E   LE                    BERR0845
00EB 0  100A          DC    /100A   GA                    BERR0850
00EC 0  1530          DC    /1530   L                     BERR0855
00ED 0  0F18          DC    /0F18   FO                    BERR0860
00EE 0  1B16          DC    /1B16   RM                    BERR0865
00EF 0  1E15          DC    /1E15   UL                    BERR0870
00F0 0  0A30          DC    /0A30   A                     BERR0875
00F1 0  0810    ER04  DC    /0810                         BERR0880
00F2 0  1215          DC    /1215   IL                    BERR0885
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00F3 0  150E          DC    /150E   LE                  BERR0890
00F4 0  100A          DC    /100A   GA                  BERR0895
00F5 0  1530          DC    /1530   L                   BERR0900
00F6 0  1B0E          DC    /1B0E   RE                  BERR0905
00F7 0  150A          DC    /150A   LA                  BERR0910
00F8 0  1D12          DC    /1D12   TI                  BERR0915
00F9 0  1817          DC    /1817   ON                  BERR0920
00FA 0  0A00    ER05  DC    /0A00                       BERR0925
00FB 0  1215          DC    /1215   IL                  BERR0930
00FC 0  150E          DC    /150E   LE                  BERR0935
00FD 0  100A          DC    /100A   GA                  BERR0940
00FE 0  1530          DC    /1530   L                   BERR0945
00FF 0  1512          DC    /1512   LI                  BERR0950
0100 0  170E          DC    /170E   NE                  BERR0955
0101 0  3017          DC    /3017    N                  BERR0960
0102 0  1E16          DC    /1E16   UM                  BERR0965
0103 0  0B0E          DC    /0B0E   BE                  BERR0970
0104 0  1B30          DC    /1B30   R                   BERR0975
0105 0  0B10    ER06  DC    /0B10                       BERR0980
0106 0  1215          DC    /1215   IL                  BERR0985
0107 0  150E          DC    /150E   LE                  BERR0990
0108 0  100A          DC    /100A   GA                  BERR0995
0109 0  1530          DC    /1530   L                   BERR1000
010A 0  1C1D          DC    /1C1D   ST                  BERR1005
010B 0  0A1D          DC    /0A1D   AT                  BERR1010
010C 0  0E16          DC    /0E16   EM                  BERR1015
010D 0  0E17          DC    /0E17   EN                  BERR1020
010E 0  1D30          DC    /1D30   T                   BERR1025
010F 0  1D22          DC    /1D22   TY                  BERR1030
0110 0  190E          DC    /190E   PE                  BERR1035
0111 0  0810    ER07  DC    /0810                       BERR1040
0112 0  1215          DC    /1215   IL                  BERR1045
0113 0  150E          DC    /150E   LE                  BERR1050
0114 0  100A          DC    /100A   GA                  BERR1055
0115 0  1530          DC    /1530   L                   BERR1060
0116 0  1F0A          DC    /1F0A   VA                  BERR1065
0117 0  1B12          DC    /1B12   RI                  BERR1070
0118 0  0A0B          DC    /0A0B                       BERR1075
0119 0  150E          DC    /150E   LE                  BERR1080
011A 0  0710    ER08  DC    /0710                       BERR1085
011B 0  1215          DC    /1215   IL                  BERR1090
011C 0  150E          DC    /150E   LE                  BERR1095
011D 0  100A          DC    /100A   GA                  BERR1100
011E 0  1530          DC    /1530   L                   BERR1105
011F 0  0F18          DC    /0F18   FO                  BERR1110
0120 0  1B16          DC    /1B16   RM                  BERR1115
0121 0  0A1D          DC    /0A1D   AT                  BERR1120
0122 0  0810    ER09  DC    /0810                       BERR1125
0123 0  1718          DC    /1718   NO                  BERR1130
0124 0  300E          DC    /300E    E                  BERR1135
0125 0  170D          DC    /170D   ND                  BERR1140
0126 0  301C          DC    /301C    S                  BERR1145
0127 0  1D0A          DC    /1D0A   TA                  BERR1150
0128 0  1D0E          DC    /1D0E   TE                  BERR1155
0129 0  160E          DC    /160E   ME                  BERR1160
012A 0  171D          DC    /171D   NT                  BERR1165
012B 0  0911    ER10  DC    /0911                       BERR1170
012C 0  1E17          DC    /1E17   UM                  BERR1175
012D 0  0D0E          DC    /0D0E   DE                  BERR1180
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012E 0  0F12          DC    /0F12   FI                  BERR118
012F 0  170E          DC    /170E   NE                  BERR119
0130 0  0D30          DC    /0D30   D                   BERR119
0131 0  0F1E          DC    /0F1E   FU                  BERR120
0132 0  170C          DC    /170C   NC                  BERR120
0133 0  1D12          DC    /1D12   TI                  BERR121
0134 0  1817          DC    /1817   ON                  BERR121
0135 0  0B10    ER11  DC    /0B10                       BERR122
0136 0  1E17          DC    /1E17   UN                  BERR122
0137 0  0D0E          DC    /0D0E   DE                  BERR123
0138 0  0F12          DC    /0F12   FI                  BERR123
0139 0  170E          DC    /170E   NE                  BERR124
013A 0  0D30          DC    /0D30   D                   BERR124
013B 0  1512          DC    /1512   LI                  BERR125
013C 0  170E          DC    /170E   NE                  BERR125
013D 0  3017          DC    /3017    N                  BERR126
013E 0  1E16          DC    /1E16   UM                  BERR126
013F 0  0B0E          DC    /0B0E   BE                  BERR127
0140 0  1B30          DC    /1B30   R                   BERR127
0141 0  0810    ER12  DC    /0810                       BERR128
0142 0  170E          DC    /170E   NE                  BERR128
0143 0  211D          DC    /211D   XT                  BERR129
0144 0  3020          DC    /3020    W                  BERR129
0145 0  121D          DC    /121D   IT                  BERR130
0146 0  1118          DC    /1118   HO                  BERR130
0147 0  1E1D          DC    /1E1D   UT                  BERR131
0148 0  300F          DC    /300F    F                  BERR131
0149 0  181B          DC    /181B   OR                  BERR132
014A 0  0810    ER13  DC    /0810                       BERR132
014B 0  0F18          DC    /0F18   FO                  BERR133
014C 0  1B30          DC    /1B30   R                   BERR133
014D 0  2012          DC    /2012   WI                  BERR134
014E 0  1D11          DC    /1D11   TH                  BERR134
014F 0  181E          DC    /181E   OU                  BERR135
0150 0  1D30          DC    /1D30   T                   BERR135
0151 0  170E          DC    /170E   NE                  BERR136
0152 0  211D          DC    /211D   XT                  BERR136
0153 0  0F11    ER14  DC    /0F11                       BERR137
0154 0  1217          DC    /1217   IN                  BERR137
0155 0  0C18          DC    /0C18   CO                  BERR138
0156 0  1B1B          DC    /1B1B   RR                  BERR138
0157 0  0E0C          DC    /0E0C   EC                  BERR139
0158 0  1D30          DC    /1D30   T                   BERR139
0159 0  171E          DC    /171E   NU                  BERR140
015A 0  160B          DC    /160B   MB                  BERR140
015B 0  0E1B          DC    /0E1B   ER                  BERR141
015C 0  3018          DC    /3018    O                  BERR141
015D 0  0F30          DC    /0F30   F                   BERR142
015E 0  0A1B          DC    /0A1B   AR                  BERR142
015F 0  101E          DC    /101E   GU                  BERR143
0160 0  160E          DC    /160E   ME                  BERR143
0161 0  171D          DC    /171D   NT                  BERR144
0162 0  1C30          DC    /1C30   S                   BERR144
0163 0  0A10    ER15  DC    /0A10                       BERR145
0164 0  0C1E          DC    /0C1E   CU                  BERR145
0165 0  1D30          DC    /1D30   T                   BERR146
0166 0  191B          DC    /191B   PR                  BERR146
0167 0  1810          DC    /1810   CG                  BERR147
0168 0  1B0A          DC    /1B0A   RA                  BERR147
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0169 0  1630          DC    /1630   M                    BERR1480
016A 0  181B          DC    /181B   OR                   BERR1485
016B 0  300D          DC    /300D    C                   BERR1490
016C 0  1216          DC    /1216   IM                   BERR1495
016D 0  1C30          DC    /1C30   S                    BERR1500
016E 0  0F11   ER16   DC    /0F11                        BERR1505
016F 0  1217          DC    /1217   IN                   BERR1510
0170 0  0C18          DC    /0C18   CO                   BERR1515
0171 0  1E1B          DC    /1B1B   RR                   BERR1520
0172 0  0E0C          DC    /0E0C   EC                   BERR1525
0173 0  1D30          DC    /1D30   T                    BERR1530
0174 0  171E          DC    /171E   NU                   BERR1535
0175 0  160B          DC    /160B   MR                   BERR1540
0176 0  0E1B          DC    /0E1B   ER                   BERR1545
0177 0  3018          DC    /3018    O                   BERR1550
0178 0  0F30          DC    /0F30   F                    BERR1555
0179 0  1C1E          DC    /1C1E   SU                   BERR1560
017A 0  0B1C          DC    /0B1C   BS                   BERR1565
017B 0  0C1B          DC    /0C1B   CR                   BERR1570
017C 0  1219          DC    /1219   IP                   BERR1575
017D 0  1D1C          DC    /1D1C   TS                   BERR1580
017E 0  0B11   ER17   DC    /0B11                        BERR1585
017F 0  0F18          DC    /0F18   FO                   BERR1590
0180 0  1B1C          DC    /1B1C   RS                   BERR1595
0181 0  3017          DC    /3017    N                   BERR1600
0182 0  0E1C          DC    /0E1C   ES                   BERR1605
0183 0  1D0E          DC    /1D0E   TE                   BERR1610
0184 0  0D30          DC    /0D30   D                    BERR1615
0185 0  1D18          DC    /1D18   TO                   BERR1620
0186 0  1830          DC    /1830   O                    BERR1625
0187 0  0D0E          DC    /0D0E   DE                   BERR1630
0188 0  0E19          DC    /0E19   EP                   BERR1635
0189 0  1522          DC    /1522   LY                   BERR1640
018A 0  0B10   ER18   DC    /0B10                        BERR1645
018B 0  1215          DC    /1215   IL                   BERR1650
018C 0  150E          DC    /150E   LE                   BERR1655
018D 0  100A          DC    /100A   GA                   BERR1660
018E 0  1530          DC    /1530   L                    BERR1665
018F 0  1512          DC    /1512   LI                   BERR1670
0190 0  170E          DC    /170E   NE                   BERR1675
0191 0  301B          DC    /301B    R                   BERR1680
0192 0  0E0F          DC    /0E0F   EF                   BERR1685
0193 0  0E1B          DC    /0E1B   EH                   BERR1690
0194 0  0E17          DC    /0E17   EN                   BERR1695
0195 0  0C0E          DC    /0C0E   CE                   BERR1700
0196 0  0D10   ER19   DC    /0D10                        BERR1705
0197 0  0E21          DC    /0E21   EX                   BERR1710
0198 0  191B          DC    /191B   PR                   BERR1715
0199 0  0E1C          DC    /0E1C   ES                   BERR1720
019A 0  1C12          DC    /1C12   SI                   BERR1725
019B 0  1817          DC    /1817   UN                   BERR1730
019C 0  301D          DC    /301D    T                   BERR1735
019D 0  1818          DC    /1818   OO                   BERR1740
019E 0  300C          DC    /300C    C                   BERR1745
019F 0  1816          DC    /1816   OM                   BERR1750
01A0 0  1915          DC    /1915   PL                   BERR1755
01A1 0  120C          DC    /120C   IC                   BERR1760
01A2 0  0A1D          DC    /0A1D   AT                   BERR1765
01A3 0  0E0D          DC    /0E0D   ED                   BERR1770
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01A4 0  0611        ER20  DC    /0611                                  BERR1775
01A5 0  1C22              DC    /1C22    SY                            BERR1780
01A6 0  1C1D              DC    /1C1D    ST                            BERR1785
01A7 0  0E16              DC    /0E16    EM                            BERR1790
01A8 0  300E              DC    /300E     E                            BERR1795
01A9 0  1B1B              DC    /1B1B    RR                            BERR1800
01AA 0  181B              DC    /181B    OR                            BERR1805
01AB 0  0601        ER21  DC    /0601                                  BERR1810
01AC 0  181E              DC    /181E    OU                            BERR1815
01AD 0  1D30              DC    /1D30    T                             BERR1820
01AE 0  180F              DC    /180F    OF                            BERR1825
01AF 0  300D              DC    /300D     D                            BERR1830
01B0 0  0A1D              DC    /0A1D    AT                            BERR1835
01B1 0  0A30              DC    /0A30    A                             BERR1840
01B2 0  0811        ER22  DC    /0811                                  BERR1845
01B3 0  1C1E              DC    /1C1E    SU                            BERR1850
01B4 0  0B1C              DC    /0B1C    BS                            BERR1855
01B5 0  0C1B              DC    /0C1B    CR                            BERR1860
01B6 0  1219              DC    /1219    IP                            BERR1865
01B7 0  1D30              DC    /1D30    T                             BERR1870
01B8 0  0E1B              DC    /0E1B    ER                            BERR1875
01B9 0  1B18              DC    /1B18    RO                            BERR1880
01BA 0  1B30              DC    /1B30    R                             BERR1885
01BB 0  0A11        ER23  DC    /0A11                                  BERR1890
01BC 0  180E              DC    /180E    RE                            BERR1895
01BD 0  1D1E              DC    /1D1E    TU                            BERR1900
01BE 0  1B17              DC    /1B17    RN                            BERR1905
01BF 0  300B              DC    /300B     B                            BERR1910
01C0 0  0E0F              DC    /0E0F    EF                            BERR1915
01C1 0  181B              DC    /181B    OR                            BERR1920
01C2 0  0E30              DC    /0E30    E                             BERR1925
01C3 0  1018              DC    /1018    GO                            BERR1930
01C4 0  1C1E              DC    /1C1E    SU                            BERR1935
01C5 0  0B30              DC    /0B30    B                             BERR1940
01C6 0  0C11        ER24  DC    /0C11                                  BERR1945
01C7 0  1018              DC    /1018    GO                            BERR1950
01C8 0  1C1E              DC    /1C1E    SU                            BERR1955
01C9 0  0B30              DC    /0B30    B                             BERR1960
01CA 0  170E              DC    /170E    NE                            BERR1965
01CB 0  1C1D              DC    /1C1D    ST                            BERR1970
01CC 0  0E0D              DC    /0E0D    ED                            BERR1975
01CD 0  301D              DC    /301D     T                            BERR1980
01CE 0  1818              DC    /1818    OO                            BERR1985
01CF 0  300D              DC    /300D     D                            BERR1990
01D0 0  0E0E              DC    /0E0E    EE                            BERR1995
01D1 0  1915              DC    /1915    PL                            BERR2000
01D2 0  2230              DC    /2230    Y                             BERR2005
01D3 0  0911        ER35  DC    /0911                                  BERR2010
01D4 0  0E1B              DC    /0E1B    ER                            BERR2015
01D5 0  1B18              DC    /1B18    RO                            BERR2020
01D6 0  1B30              DC    /1B30    R                             BERR2025
01D7 0  1817              DC    /1817    ON                            BERR2030
01D8 0  300D              DC    /300D     D                            BERR2035
01D9 0  0A1D              DC    /0A1D    AT                            BERR2040
01DA 0  0A30              DC    /0A30    A                             BERR2045
01DB 0  0C0A              DC    /0C0A    CA                            BERR2050
01DC 0  1B0D              DC    /1B0D    RD                            BERR2055
01DD 0  0311        ERR   DC    /0311                                  BERR2060
01DE 0  0E1B              DC    /0E1B    ER                            BERR2065
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01DF 0  1B18              DC      /1B18     RO                    BERR2070
01E0 0  1B30              DC      /1B30     R                     BERR2075
01E1 0  0C11        ER37  DC      /0C11                           BERR2080
01E2 0  1215              DC      /1215     IL                    BERR2085
01E3 0  150E              DC      /150E     LE                    BERR2090
01E4 0  100A              DC      /100A     GA                    BERR2095
01E5 0  1530              DC      /1530     L                     BERR2100
01E6 0  1C1D              DC      /1C1D     ST                    BERR2105
01E7 0  181B              DC      /181B     OR                    BERR2110
01E8 0  0E30              DC      /0E30     E                     BERR2115
01E9 0  1819              DC      /1819     OP                    BERR2120
01EA 0  0E1B              DC      /0E1B     ER                    BERR2125
01EB 0  0A1D              DC      /0A1D     AT                    BERR2130
01EC 0  1218              DC      /1218     IO                    BERR2135
01ED 0  1730              DC      /1730     N                     BERR2140
01EE 0  1511        ER38  DC      /1511                           BERR2145
01EF 0  1C1E              DC      /1C1E     SU                    BERR2150
01F0 0  0B1C              DC      /0B1C     BS                    BERR2155
01F1 0  0C1B              DC      /0C1B     CR                    BERR2160
01F2 0  1219              DC      /1219     IP                    BERR2165
01F3 0  1D0E              DC      /1D0E     TE                    BERR2170
01F4 0  0D30              DC      /0D30     D                     BERR2175
01F5 0  1F0A              DC      /1F0A     VA                    BERR2180
01F6 0  1B12              DC      /1B12     RI                    BERR2185
01F7 0  0A0B              DC      /0A0B     AB                    BERR2190
01F8 0  150E              DC      /150E     LE                    BERR2195
01F9 0  3017              DC      /3017      N                    BERR2200
01FA 0  181D              DC      /181D     OT                    BERR2205
01FB 0  3012              DC      /3012      I                    BERR2210
01FC 0  1730              DC      /1730     N                     BERR2215
01FD 0  0D12              DC      /0D12     DI                    BERR2220
01FE 0  1630              DC      /1630     M                     BERR2225
01FF 0  1C1D              DC      /1C1D     ST                    BERR2230
0200 0  0A1D              DC      /0A1D     AT                    BERR2235
0201 0  0E16              DC      /0E16     EM                    BERR2240
0202 0  0E17              DC      /0E17     EN                    BERR2245
0203 0  1D30              DC      /1D30     T                     BERR2250
0204                      END                                     BERR2255

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   071 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                            BERR2260

*DELETE              BERR                                        BERR2265
CART ID 0001   DB ADDR  373A   DB CNT   0019

*STORE       WS  UA  BERR                                        BERR2270
CART ID 0001   DB ADDR  3A10   DB CNT   001B

// EJECT
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// ASM                                                                    BCOM0005
*LIST                                                                     BCOM0010
*SYSTEM SYMBOL TABLE                                                      BCOM0015
                    * BASIC COMPILER                                      BCOM0020
0007     020D6517          ENT      BCOMP                                BCOM0025
0000 00  D4000200   MRCD   STO   L  LP        SAVE POINTER               BCOM0030
0002 0   6138              LDX    1 56        NO END STATEMENT           BCOM0035
0003 30  02159640          CALL     BERR                                 BCOM0040
0005 01  4C800007          B     I  BCOMP                                BCOM0045
0007 0   0000       BCOMP  DC       *-*                                  BCOM0050
0008 0   7005              B        BSTA                                 BCOM0055
0009 30  02255000   BST    CALL     BIN       READ A LINE OF INPUT       BCOM0060
000B 0   70F4              B        MRCD      MON CTL RECORD FOUND       BCOM0065
000C 00  D4000200          STO   L  LP        STORE POINTER              BCOM0070
000E 00  C4000200   BSTA   LD    L  LP                                   BCOM0075
0010 00  7400020A          MDM   L  LSW       CHECK PRINT SWITCH         BCOM0080
0012 0   7001              B        *+1       PRINT                      BCOM0085
0013 0   7002              B        *+2       NO PRINT                   BCOM0090
0014 30  025A48C0          CALL     BOUT                                 BCOM0095
                    * CHECK FOR COMPLETELY BLANK LINE                     BCOM0100
0016 00  C4800200          LD    I  LP                                   BCOM0105
0018 01  F4000097          EOR   L  EOS       IS 1ST CHAR END-OF-STATMT  BCOM0110
001A 01  4C180009          BZ       BST       IF YES, READ AGAIN         BCOM0115
                    * REMOVE BLANKS FROM STATEMENT                        BCOM0120
001C 00  65800200          LDX   I1 LP                                   BCOM0125
001E 00  66800200          LDX   I2 LP                                   BCOM0130
0020 0   C074              LD       K1        INITIALIZE PRIME SWITCH    BCOM0135
0021 0   D072              STO      PRIME                                BCOM0140
0022 0   C100       RBLP   LD     1 0         GET CHAR FROM LINE         BCOM0145
0023 0   D200              STO    2 0         PUT BACK INTO LINE         BCOM0150
0024 0   F06D              EOR      BL        WAS IT BLANK               BCOM0155
0025 01  74000094          MDM   L  PRIME,0   IS PRIME SWITCH ON         BCOM0160
0027 0   4820              SKP      Z         SKIP IF BLANK + PRIME OFF  BCOM0165
0028 0   7201              MDX    2 1         MOVE POINTER               BCOM0170
0029 0   C100              LD     1 0         GET SAME CHAR FROM LINE    BCOM0175
002A 0   F06B              EOR      PR        IS IT PRIME                BCOM0180
002B 01  4C200030          BNZ      CEOS      BRANCH IF NOT              BCOM0185
002D 0   C066              LD       PRIME     REVERSE SETTING OF         BCOM0190
002E 0   F066              EOR      K1        PRIME SWITCH               BCOM0195
002F 0   D064              STO      PRIME                                BCOM0200
0030 0   C100       CEOS   LD     1 0         GET CHAR FROM LINE         BCOM0205
0031 0   F065              EOR      EOS       IS IT EOS                  BCOM0210
0032 01  4C180036          BZ       RB1       DONE IF YES                BCOM0215
0034 0   7101              MDX    1 1                                    BCOM0220
0035 0   70EC              B        RBLP      GO AROUND AGAIN            BCOM0225
                    * ISOLATE AND CONVERT LINE NUMBER TO BINARY           BCOM0230
0036 30  071630C0   RB1    CALL     GETC      GET A CHARACTER            BCOM0235
0038 01  4C200059          BNZ      LN3       BRANCH IF NON-NUMERIC      BCOM0240
003A 00  C4000201          LD    L  C         LOAD THE CHAR              BCOM0245
003C 0   D05B              STO      NUM       INITIALIZE LINE NUM        BCOM0250
003D 0   6104              LDX    1 4         MAX 4 DIGIT LINE NO.       BCOM0255
003E 30  071630C0   LN1    CALL     GETC      NEXT CHARACTER             BCOM0260
0040 01  4C200053          BNZ      LN2       BRANCH IF NON-NUMERIC      BCOM0265
0042 0   C055              LD       NUM       MULTIPLY NUM BY 10         BCOM0270
0043 0   1002              SLA      2         AND ADD DIGIT              BCOM0275
0044 0   8053              A        NUM                                  BCOM0280
0045 0   1001              SLA      1                                    BCOM0285
0046 00  84000201          A     L  C                                    BCOM0290
0048 0   D04F              STO      NUM                                  BCOM0295
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0049 0  71FF                MDX   1 -1                                    BCOM0300
004A 0  70F3                B       LN1                                   BCOM0305
004B 0  6101                LDX   1 1          ERROR--TOO MANY DIGITS     BCOM0310
004C 30 02159640            CALL    BERR       PRINT ERROR MESSAGE        BCOM0315
004E 30 071630C0     SC1    CALL    GETC       SCAN TO 1ST NON-NUMERIC    BCOM0320
0050 01 4C18004E            BZ      SC1        CHARACTER                  BCOM0325
0052 0  7006                B       LN3        GO ON WITH STATEMENT       BCOM0330
0053 0  C044         LN2    LD      NUM        GET CONVERTED NUMBER       BCOM0335
0054 01 4C20005D            BNZ     LN4        ZERO IS ILLEGAL VALUE      BCOM0340
0056 0  6102                LDX   1 2          ERROR - ZERO VALUE         BCOM0345
0057 30 02159640            CALL    BERR       PRINT ERROR MESSAGE        BCOM0350
0059 0  1010         LN3    SLA     16         CLEAR ACC                  BCOM0355
005A 00 740101FF            MDM   L LNINC,1    ADD TO INCREMENT           BCOM0360
005C 0  7005                B       GTS                                   BCOM0365
005D 00 D40001FE     LN4    STO   L LNUM       LEAVE NUMBER IN FIXED PLACE BCOM0370
005F 0  1810                SRA     16         CLEAR INCREMENT            BCOM0375
0060 00 D40001FF            STO   L LNINC                                 BCOM0380
                     * IDENTIFY STATEMENT TYPE                            BCOM0385
0062 00 74FF0200     GTS    MDM   L LP,-1      POINT TO BEGINNING OF KEYWD BCOM0390
0064 30 02889100            CALL    BSID                                  BCOM0395
0066 01 4C100073            BNN     SOK                                   BCOM0400
0068 0  6103                LDX   1 3          ILLEGAL STATEMENT          BCOM0405
0069 30 02159640            CALL    BERR                                  BCOM0410
006B 0  1810                SRA     16                                    BCOM0415
006C 0  D026                STO     STYP                                  BCOM0420
006D 30 01899000            CALL    ASR                                   BCOM0425
006F 30 23899000            CALL    TSR                                   BCOM0430
0071 01 4C000009            B     L BST        READ ANOTHER               BCOM0435
0073 0  D01F         SOK    STO     STYP                                  BCOM0440
0074 01 C4000093            LD    L STYP                                  BCOM0445
0076 30 01899000            CALL    ASR        GET STORAGE FOR STMNT REC  BCOM0450
0078 01 65800093            LDX  I1 STYP                                  BCOM0455
007A 01 45800099            BSI  I1 STBL                                  BCOM0460
007C 0  700D                B       STERR      STATEMENT ERROR            BCOM0465
007D 30 23899000     STSR   CALL    TSR        TERMINATE STMNT RECORD     BCOM0470
007F 0  C013                LD      STYP       CHECK FOR END STATEMENT    BCOM0475
0080 0  900E                S       ENDT                                  BCOM0480
0081 01 4C200009            BNZ     BST        READ IF NOT 'END'          BCOM0485
0083 01 440004E1            BSI   L BLINK                                 BCOM0490
0085 0  7002                B       *+2                                   BCOM0495
0086 01 74010007            MDM   L BCOMP,1                               BCOM0500
0088 01 4C800007            B     I BCOMP                                 BCOM0505
008A 0  C003         STERR  LD      SK3                                   BCOM0510
008B 00 D4000207            STO   L LREC                                  BCOM0515
008D 0  70EF                B       STSR                                  BCOM0520
008E 0  0003         SK3    DC      3                                     BCOM0525
008F 0  000D         ENDT   DC      13                                    BCOM0530
0090 0  0007         K7     DC      7                                     BCOM0535
0091 0  000A         K10    DC      10                                    BCOM0540
0092 0  0030         BL     DC      /30                                   BCOM0545
0093 0  0000         STYP   DC      0                                     BCOM0550
0094 0  0001         PRIME  DC      1                                     BCOM0555
0095 0  0001         K1     DC      1                                     BCOM0560
0096 0  002D         PR     DC      /2D                                   BCOM0565
0097 0  003F         ECS    DC      /3F                                   BCOM0570
0098 0  0000         NUM    DC      0                                     BCOM0575
0099 1  00B1         STBL   DC      LET                                   BCOM0580
009A 1  00FE                DC      PRINT                                 BCOM0585
009B 1  0179                DC      READ                                  BCOM0590
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009C 1  01A0                DC      GOTO                                  BCOM0595
009D 1  01C0                DC      IF                                    BCOM0600
009E 1  0248                DC      FOR                                   BCOM0605
009F 1  02EF                DC      NEXT                                  BCOM0610
00A0 1  0330                DC      REM                                   BCOM0615
00A1 1  0340                DC      GOSUB                                 BCOM0620
00A2 1  035D                DC      RETRN                                 BCOM0625
00A3 1  0375                DC      DIM                                   BCOM0630
00A4 1  03DF                DC      DEF                                   BCOM0635
00A5 1  047F                DC      STOP                                  BCOM0640
00A6 1  0490                DC      END                                   BCOM0645
00A7 1  04A7                DC      ON                                    BCOM0650
00A8 1  04B6                DC      VOID                                  BCOM0655
00A9 1  04C7                DC      DEBUG                                 BCOM0660
00AA 1  04D4                DC      KEYB                                  BCOM0665
00AB 1  00AC                DC      CPAGE                                 BCOM0670
00AC 0  0000          CPAGE DC      *-*                                   BCOM0675
00AD 01 740100AC            MDM   L CPAGE,1                               BCOM0680
00AF 01 4C8000AC            B     I CPAGE                                 BCOM0685
                      * LET                                               BCOM0690
00B1 0  0000          LET   DC      *-*                                   BCOM0695
00B2 00 74000203            MDM   L DBUG,0                                BCOM0700
00B4 0  7003                B       *+3                                   BCOM0705
00B5 0  C043                LD      LETAD                                 BCOM0710
00B6 30 025A48C0            CALL    BOUT                                  BCOM0715
00B8 01 44000555            BSI   L BSCAN     HANDLE LEFT SIDE            BCOM0720
00BA 0  7030                B       LTER1     ERROR                       BCOM0725
00BB 00 C4000201            LD    L C         CHECK FOR =                 BCOM0730
00BD 0  9037                S       EQL                                   BCOM0735
00BE 01 4C2000F6            BNZ     SUBSC     NO =, SO ERROR              BCOM0740
00C0 0  D029                STO     NSTOL     SET NO. STOLS TO ZERO       BCOM0745
00C1 30 071630C0      EQSKP CALL    GETC      SKIP OVER =                 BCOM0750
00C3 01 44000555            BSI   L BSCAN     HANDLE EXPRESSION           BCOM0755
00C5 0  7027                B       LTER2     ERROR                       BCOM0760
00C6 00 C4000201            LD    L C         CHECK FOR EOS               BCOM0765
00C8 01 94000097            S     L EOS                                   BCOM0770
00CA 01 4C1800D4            BZ      STOUT     YES, OUTPUT STORE CODES     BCOM0775
00CC 00 C4000201            LD    L C         CHECK FOR =                 BCOM0780
00CE 0  9026                S       EQL                                   BCOM0785
00CF 01 4C2000F6            BNZ     SUBSC     NO, SO ERROR                BCOM0790
00D1 01 740100EA            MDM   L NSTOL,1   COUNT NO. OF STORE + LEAVE  BCOM0795
00D3 0  70ED                B       EQSKP                                 BCOM0800
00D4 01 740000EA      STOUT MDM   L NSTOL,0   CHECK FOR STORE + LEAVE     BCOM0805
00D6 0  7001                B       *+1                                   BCOM0810
00D7 0  7006                B       RSTOR     GO REGULAR STORE            BCOM0815
00D8 0  C010                LD      LK8       STORE+LEAVE CODE            BCOM0820
00D9 30 03584141            CALL    CODEA                                 BCOM0825
00DB 01 74FF00FA            MDM   L NSTOL,-1                              BCOM0830
00DD 0  70FB                B       *-5                                   BCOM0835
00DE 0  C019          RSTOR LD      STO       REGULAR STORE CODE          BCOM0840
00DF 30 03584140            CALL    CODE                                  BCOM0845
00E1 01 C4000097            LD    L EOS       OUTPUT EOS CODE             BCOM0850
00E3 30 03584140            CALL    CODE                                  BCOM0855
00E5 01 740100B1            MDM   L LET,1                                 BCOM0860
00E7 01 4C8000B1            B     I LET                                   BCOM0865
00E9 0  0008          LK8   DC      8         STORE+LEAVE CODE            BCOM0870
00EA 0  0000          NSTOL DC      0                                     BCOM0875
00EB 0  6104          LTER1 LDX   1 4                                     BCOM0880
00EC 0  7004                B       LTER                                  BCOM0885
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00ED 0  6105        LTER2 LDX    1 5                                    BCOM0890
00EE 0  7002              B        LTER                                 BCOM0895
00EF 0  6106        LTER3 LDX    1 6                                    BCOM0900
00F0 0  7000              B        LTER                                 BCOM0905
00F1 30 02159640    LTER  CALL     BERR                                 BCOM0910
00F3 01 4C8000B1          B     I  LET                                  BCOM0915
00F5 0  0028        EQL   DC       /28                                  BCOM0920
00F6 0  6107        SUBSC LDX    1 7                                    BCOM0925
00F7 0  70F9              B        LTER                                 BCOM0930
00F8 0  000A        STO   DC       10        = (STORE OP)               BCOM0935
00F9 1  00FA        LETAD DC       *                                    BCOM0940
00FA 0  0015              DC       /15                                  BCOM0945
00FB 0  000E              DC       /E                                   BCOM0950
00FC 0  001D              DC       /1D                                  BCOM0955
00FD 0  003F              DC       /3F                                  BCOM0960
                    * PRINT                                             BCOM0965
00FE 0  0000        PRINT DC       *-*                                  BCOM0970
00FF 00 74000203          MDM   L  DBUG,0                               BCOM0975
0101 0  7003              B        *+3                                  BCOM0980
0102 0  C037              LD       PAD                                  BCOM0985
0103 30 025A48C0          CALL     BOUT                                 BCOM0990
0105 00 C4000201    P02   LD    L  C         GET CHAR TYPE              BCOM0995
0107 01 F4000097          EOR   L  EOS                                  BCOM1000
0109 01 4C200113          BNZ      P10                                  BCOM1005
010B 01 C4000097    P05   LD    L  EOS                                  BCOM1010
010D 30 03584140          CALL     CODE                                 BCOM1015
010F 01 740100FE          MDM   L  PRINT,1                              BCOM1020
0111 01 4C8000FE          B     I  PRINT                                BCOM1025
0113 00 C4000201    P10   LD    L  C                                    BCOM1030
0115 0  F061              EOR      PRC                                  BCOM1035
0116 01 4C180141          BZ       PLTL                                 BCOM1040
0118 01 44000555          BSI   L  BSCAN                                BCOM1045
011A 0  701A              B        PER1                                 BCOM1050
011B 00 C4000201    P15   LD    L  C                                    BCOM1055
011D 0  F015              EOR      PCMA                                 BCOM1060
011E 01 4C200126          BNZ      P20       CHECK FOR SEMI-COLON       BCOM1065
0120 0  C013              LD       PC                                   BCOM1070
0121 30 03584140          CALL     CODE                                 BCOM1075
0123 30 071630C0          CALL     GETC                                 BCOM1080
0125 0  70DF              B        P02                                  BCOM1085
0126 00 C4000201    P20   LD    L  C                                    BCOM1090
0128 0  F008              EOR      SEMIC                                BCOM1095
0129 01 4C200105          BNZ      P02                                  BCOM1100
012B 0  C006              LD       SC18                                 BCOM1105
012C 30 03584141          CALL     CODEA                                BCOM1110
012E 30 071630C0          CALL     GETC                                 BCOM1115
0130 0  70D4              B        P02                                  BCOM1120
0131 0  0031        SEMIC DC       /31                                  BCOM1125
0132 0  0012        SC18  DC       18                                   BCOM1130
0133 0  002C        PCMA  DC       /2C                                  BCOM1135
0134 0  0006        PC    DC       6                                    BCOM1140
0135 0  610B        PER1  LDX    1 8                                    BCOM1145
0136 30 02159640          CALL     BERR                                 BCOM1150
0138 01 4C8000FE          B     I  PRINT                                BCOM1155
013A 1  013B        PAD   DC       *                                    BCOM1160
013B 0  0019              DC       /19                                  BCOM1165
013C 0  001B              DC       /1B                                  BCOM1170
013D 0  0012              DC       /12                                  BCOM1175
013E 0  0017              DC       /17                                  BCOM1180
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013F 0  001D                DC      /1D                                    BCOM1185
0140 0  003F                DC      /3F                                    BCOM1190
0141 0  C033         PLTL   LD      IP17                                   BCOM1195
0142 30 03584141            CALL    CODEA                                  BCOM1200
0144 00 C4000200            LD   L  LP                                     BCOM1205
0146 0  D02D                STC     PTMP                                   BCOM1210
0147 0  1810                SRA     16                                     BCOM1215
0148 0  D02D                STO     PNC                                    BCOM1220
0149 30 071630C0     LTLP   CALL    GETC                                   BCOM1225
014B 01 4C280150            BN      CHECK                                  BCOM1230
014D 01 74010176     CTCR   MDM  L  PNC,1                                  BCOM1235
014F 0  70F9                B       LTLP                                   BCOM1240
0150 00 C4000201     CHECK  LD   L  C                                      BCOM1245
0152 01 F4000097            EOR  L  EOS       HAVE WE REACHED END OF INPUTBCOM1250
0154 01 4C18015B            BZ      MISQ      YES, QUOTE MISSING           BCOM1255
0156 00 C4000201            LD   L  C                                      BCOM1260
0158 0  F01E                EOR     PRC                                    BCOM1265
0159 01 4C20014D            BNZ     CTCR                                   BCOM1270
015B                 MISQ   EQU     *                                      BCOM1275
015B 0  C01A                LD      PNC                                    BCOM1280
015C 30 03584141            CALL    CODEA                                  BCOM1285
015E 0  C015                LD      PTMP                                   BCOM1290
015F 00 D4000200            STO  L  LP                                     BCOM1295
0161 30 071630C0     COL    CALL    GETC                                   BCOM1300
0163 00 C4000201            LD   L  C                                      BCOM1305
0165 30 03584141            CALL    CODEA                                  BCOM1310
0167 01 74FF0176            MDM  L  PNC,-1                                 BCOM1315
0169 0  70F7                B       COL                                    BCOM1320
016A 30 071630C0            CALL    GETC                                   BCOM1325
016C 00 C4000201            LD   L  C         IS CHAR PRIME                BCOM1330
016E 0  F008                EOR     PRC                                    BCOM1335
016F 01 4C200173            BNZ     *+2       NO SO DON'T SKIP IT          BCOM1340
0171 30 071630C0            CALL    GETC                                   BCOM1345
0173 0  70A7                B       P15                                    BCOM1350
0174 0  0000         PTMP   DC      0                                      BCOM1355
0175 0  0011         IP17   DC      17                                     BCOM1360
0176 0  0000         PNC    DC      0                                      BCOM1365
0177 0  002D         PRC    DC      /2D                                    BCOM1370
0178 0  0030         PBL    DC      /30                                    BCOM1375
                     * READ                                                BCOM1380
0179 0  0000         READ   DC      *-*                                    BCOM1385
017A 00 74000203            MDM  L  DBUG,0                                 BCOM1390
017C 0  7003                B       *+3                                    BCOM1395
017D 0  C01C                LD      RAD                                    BCOM1400
017E 30 025A48C0            CALL    BOUT                                   BCOM1405
0180 01 44000555     RLP    BSI  L  BSCAN                                  BCOM1410
0182 0  7014                B       RDER                                   BCOM1415
0183 00 C4000201            LD   L  C                                      BCOM1420
0185 01 F4000097            EOR  L  EOS                                    BCOM1425
0187 01 4C18018F            BZ      RD                                     BCOM1430
0189 0  C00F                LD      R6                                     BCOM1435
018A 30 03584140            CALL    CODE                                   BCOM1440
018C 30 071630C0            CALL    GETC                                   BCOM1445
018E 0  70F1                B       RLP                                    BCOM1450
018F 01 C4000097     RD     LD   L  EOS                                    BCOM1455
0191 30 03584140            CALL    CODE                                   BCOM1460
0193 01 74010179            MDM  L  READ,1                                 BCOM1465
0195 01 4C800179            B    I  READ                                   BCOM1470
0197 01 4C800179     RDER   B    I  READ                                   BCOM1475
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0199 0  0006          R6     DC      6                                  BCOM1480
019A 1  019B          RAD    DC      *                                  BCOM1485
019B 0  001B                 DC      /1B                                BCOM1490
019C 0  000E                 DC      /E                                 BCOM1495
019D 0  000A                 DC      /A                                 BCOM1500
019E 0  000D                 DC      /D                                 BCOM1505
019F 0  003F                 DC      /3F                                BCOM1510
                      * GOTO                                            BCOM1515
01A0 0  0000          GOTO   DC      *-*                                BCOM1520
01A1 00 74000203             MDM  L  DBUG,0                             BCOM1525
01A3 0  7003                 B       *+3                                BCOM1530
01A4 0  C011                 LD      GTAD                               BCOM1535
01A5 30 025A48C0             CALL    BOUT                               BCOM1540
01A7 30 074D5000             CALL    GLN                                BCOM1545
01A9 0  700A                 B       GTER                               BCOM1550
01AA 30 03584140             CALL    CODE                               BCOM1555
01AC 01 C4000097             LD   L  EOS                                BCOM1560
01AE 30 03584140             CALL    CODE                               BCOM1565
01B0 01 740101A0             MDM  L  GOTO,1                             BCOM1570
01B2 01 4C8001A0             B    I  GOTO                               BCOM1575
01B4 01 4C8001A0      GTER   B    I  GOTO                               BCOM1580
01B6 1  01B7          GTAD   DC      *                                  BCOM1585
01B7 0  0010                 DC      /10                                BCOM1590
01B8 0  0018                 DC      /18                                BCOM1595
01B9 0  001D                 DC      /1D                                BCOM1600
01BA 0  0018                 DC      /18                                BCOM1605
01BB 0  003F                 DC      /3F                                BCOM1610
                      * IF                                              BCOM1615
01BC 1  01BD          IFAD   DC      *                                  BCOM1620
01BD 0  0012                 DC      /12                                BCOM1625
01BE 0  000F                 DC      /F                                 BCOM1630
01BF 0  003F                 DC      /3F                                BCOM1635
01C0 0  0000          IF     DC      *-*                                BCOM1640
01C1 00 74000203             MDM  L  DBUG,0                             BCOM1645
01C3 0  7003                 B       *+3                                BCOM1650
01C4 0  C0F7                 LD      IFAD                               BCOM1655
01C5 30 025A48C0             CALL    BOUT                               BCOM1660
01C7 01 44000555             BSI  L  BSCAN     HANDLE 1ST EXPRESSION    BCOM1665
01C9 0  7070                 B       IFER1     ERROR                    BCOM1670
01CA 00 C4000202             LD   L  TYPE      GET CHAR TYPE            BCOM1675
01CC 01 4C280231             BN      NALPH     BRANCH IF NOT ALPHANUM   BCOM1680
01CE 00 C4000201             LD   L  C         GET CHAR                 BCOM1685
01D0 0  1008                 SLA     8                                  BCOM1690
01D1 0  D052                 STO     IFT                                BCOM1695
01D2 30 071630C0             CALL    GETC      READ NEXT CHAR           BCOM1700
01D4 00 C4000201             LD   L  C                                  BCOM1705
01D6 0  E84D                 OR      IFT                                BCOM1710
01D7 0  D04C                 STO     IFT       PACKED RELATION          BCOM1715
01D8 0  61FA                 LDX   1 -6        CHECK AGAINST 6 REATIONS BCOM1720
01D9 0  C04A          IFL    LD      IFT                                BCOM1725
01DA 01 F500022B             EOR  L1 RT+6                               BCOM1730
01DC 01 4C1801E1             BZ      IFG                                BCOM1735
01DE 0  7101                 MDX   1 1                                  BCOM1740
01DF 0  70F9                 B       IFL                                BCOM1745
01E0 0  705B                 B       IFER2     ILLEGAL RELATION         BCOM1750
01E1 0  6942          IFG    STX   1 IFT                                BCOM1755
01E2 0  C041                 LD      IFT                                BCOM1760
01E3 0  803F                 A       IK17      COMPUTE RELATION ODE     BCOM1765
01E4 0  D03F          IFV    STO     IFT       SAVE IT                  BCOM1770
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01E5 30 071630C0          CALL     GETC       GET NEXT CHAR                BCOM1775
01E7 01 44000555          BSI  L   BSCAN     HANDLE 2ND EXPRESSION         BCOM1780
01E9 0  7050              B        IFER1     ERROR                         BCOM1785
01EA 0  C035              LD       IFMI      OUTPUT MINUS CODE             BCOM1790
01EB 30 03584140          CALL     CODE                                    BCOM1795
01ED 0  C036              LD       IFT                                     BCOM1800
01EE 30 03584140          CALL     CODE      OUTPUT RELATION CODE          BCOM1805
01F0 01 6500022C          LDX  L1  THEN      PTR TO KEY WORDS              BCOM1810
01F2 00 C4000201          LD   L   C         GET CHARACTER                 BCOM1815
01F4 0  1008              SLA      8         POSITION IT                   BCOM1820
01F5 0  D02E              STO      IFT       SAVE IT                       BCOM1825
01F6 0  F035              EOR      THEN      IS CHARACTER 'T'              BCOM1830
01F7 0  1808              SRA      8                                       BCOM1835
01F8 01 4C1801FB          BZ       *+1       YES, POINT TO 'THEN'          BCOM1840
01FA 0  7102              MDX   1  2         NI, POINT TO 'GO TO'          BCOM1845
01FB 30 071630C0          CALL     GETC      GET NEXT CHAR                 BCOM1850
01FD 00 C4000201          LD   L   C                                       BCOM1855
01FF 0  E824              OR       IFT       OR WITH 1ST CHAR              BCOM1860
0200 0  9100              S     1  0         IS IT 'TH' OR 'GO'            BCOM1865
0201 01 4C20023E          BNZ      IFER3     NO ERROR                      BCOM1870
0203 30 071630C0          CALL     GETC      GET NEXT CHAR                 BCOM1875
0205 00 C4000201          LD   L   C                                       BCOM1880
0207 0  1008              SLA      8         POSITION IT                   BCOM1885
0208 0  D01B              STO      IFT       SAVE IT                       BCOM1890
0209 30 071630C0          CALL     GETC      GET NEXT CHAR                 BCOM1895
020B 00 C4000201          LD   L   C                                       BCOM1900
020D 0  E816              OR       IFT       OR WITH SAVED CHAR            BCOM1905
020E 0  9101              S     1  1         IS IT 'EN' OR 'TO'            BCOM1910
020F 01 4C20023E          BNZ      IFER3     NO, ERROR                     BCOM1915
0211 30 071630C0          CALL     GETC                                    BCOM1920
0213 30 074D5000          CALL     GLN                                     BCOM1925
0215 0  700B              B        IFER4                                   BCOM1930
0216 30 03584140          CALL     CODE                                    BCOM1935
0218 01 C4000097          LD   L   EOS                                     BCOM1940
021A 30 03584140          CALL     CODE      OUTPUT EOS CODE               BCOM1945
021C 01 740101C0          MDM  L   IF,1                                    BCOM1950
021E 01 4C8001C0          B    I   IF                                      BCOM1955
0220 0  0001        IFMI  DC       1                                       BCOM1960
0221 0  610C        IFER4 LDX   1  12        ILLEGAL LINE NO.              BCOM1965
0222 0  701C              B        IFER                                    BCOM1970
0223 0  0011        IK17  DC       17                                      BCOM1975
0224 0  0000        IFT   DC       0                                       BCOM1980
0225 0  0E1A        RT    DC       /0E1A     EQ                            BCOM1985
0226 0  170E              DC       /170E     NE                            BCOM1990
0227 0  101D              DC       /101D     GT                            BCOM1995
0228 0  100E              DC       /100E     GE                            BCOM2000
0229 0  151D              DC       /151D     LT                            BCOM2005
022A 0  150E              DC       /150E     LE                            BCOM2010
022C    0000              BSS  E   0                                       BCOM2015
022C 0  1D11        THEN  DC       /1D11     TH                            BCOM2020
022D 0  0E17              DC       /0E17     EN                            BCOM2025
022E 0  1018              DC       /1018     GO                            BCOM2030
022F 0  1D18              DC       /1D18     TO                            BCOM2035
0230 0  0028        IEQ   DC       /28                                     BCOM2040
0231 00 C4000201    NALPH LD   L   C                                       BCOM2045
0233 0  F0FC              EOR      IEQ       IS CHAR =                     BCOM2050
0234 01 4C20023C          BNZ      IFER2     NO, ILLEGAL RELATION          BCOM2055
0236 01 C4000239          LD   L   IK11      GET CODE FOR =                BCOM2060
0238 0  70AB              B        IF9                                     BCOM2065
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0239 0  000B          IK11  DC       11                                    BCOM2070
023A 0  6109          IFER1 LDX    1 9                                    BCOM2075
023B 0  7003                B        IFER                                 BCOM2080
023C 0  610A          IFER2 LDX    1 10                                   BCOM2085
023D 0  7001                B        IFER                                 BCOM2090
023E 0  610B          IFER3 LDX    1 11                                   BCOM2095
023F 30 02159640      IFER  CALL     BERR                                 BCOM2100
0241 01 4C8001C0            B     I  IF                                   BCOM2105
                      * FOR                                               BCOM2110
0243 1  0244          FORAD DC       *                                    BCOM2115
0244 0  000F                DC       /F                                   BCOM2120
0245 0  0018                DC       /18                                  BCOM2125
0246 0  001B                DC       /1B                                  BCOM2130
0247 0  003F                DC       /3F                                  BCOM2135
0248 0  0000          FOR   DC       *-*                                  BCOM2140
0249 00 74000203            MDM   L  DBUG,0                               BCOM2145
024B 0  7003                B        *+3                                  BCOM2150
024C 0  C0F6                LD       FORAD                                BCOM2155
024D 30 025A48C0            CALL     BOUT                                 BCOM2160
024F 30 078A8501            CALL     GSYMA     GET INDEX VARIABLE         BCOM2165
0251 0  7079                B        FORER     ERROR IN VARIABLE          BCOM2170
0252 0  7001                B        *+1       VARIABLE OK                BCOM2175
0253 0  7077                B        FORER     ERROR - FCN RETURN FROM RTN BCOM2180
0254 0  D07C                STO      FT        SAVE ELEMENT ID            BCOM2185
0255 00 C4000201            LD    L  C         GET CHAR                   BCOM2190
0257 0  907A                S        FEQ       IS IT =                    BCOM2195
0258 01 4C2002CB            BNZ      FORER     NO, ERROR                  BCOM2200
025A 00 C4000206            LD    L  SREC                                 BCOM2205
025C 0  9073                S        FK3       GET LOC OF THIS STMNT      BCOM2210
025D 30 17922200            CALL     PUSH      SAVE IT ON STACK           BCOM2215
025F 1  02D8                DC       FORSK                                BCOM2220
0260 0  706A                B        FORER                                BCOM2225
0261 00 74070206            MDM   L  SREC,7    ALLOW SPACE FOR INCR AND   BCOM2230
0263 00 74070207            MDM   L  LREC,7                               BCOM2235
                      *                        FINAL VALUE + LOC OF 'NEXT' BCOM2240
0265 0  C06B                LD       FT        GET ELEMENT ID             BCOM2245
0266 30 03584140            CALL     CODE      PUT INTO STMNT RECORD      BCOM2250
0268 30 17922200            CALL     PUSH      PUSH INTO STACK TO ALLOW TE BCOM2255
                      *                        STING OF NESTING           BCOM2260
026A 1  02D8                DC       FORSK                                BCOM2265
026B 0  705F                B        FORER     TOO MANY FOR'S             BCOM2270
026C 30 071630C0            CALL     GETC      READ 1ST CHAR OF EXPR      BCOM2275
026E 01 44000555            BSI   L  BSCAN     HANDLE INIT VALUE EXPR     BCOM2280
0270 0  705A                B        FORER     ERROR IN EXPRESSION        BCOM2285
0271 00 C4000201            LD    L  C         GET CHAR                   BCOM2290
0273 0  1008                SLA      8                                    BCOM2295
0274 0  D05C                STO      FT                                   BCOM2300
0275 30 071630C0            CALL     GETC      GET NEXT CHAR              BCOM2305
0277 00 C4000201            LD    L  C                                    BCOM2310
0279 0  E857                OR       FT        TWO CHARS PACKED           BCOM2315
027A 0  9058                S        TCCCN     ARE THEY 'TO'              BCOM2320
027B 01 4C2002CB            BNZ      FORER     NO, ERROR IN STMNT FORM    BCOM2325
027D 30 071630C0            CALL     GETC      GET NEXT CHAR              BCOM2330
027F 01 44000555            BSI   L  BSCAN     HANDLE FINAL VALUE EXPR    BCOM2335
0281 0  7049                B        FORER     ERROR IN EXPRESSION        BCOM2340
0282 00 C4000201            LD    L  C         IS NEXT CHAR EOS           BCOM2345
0284 0  9050                S        FEOS                                 BCOM2350
0285 01 4C1802B0            BZ       STEP1     YES, MAKE STEP=1           BCOM2355
0287 00 C4000201            LD    L  C         NO, SO CHECK FOR 'STEP'    BCOM2360
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0289 0  1008                SLA     8
028A 0  D046                STO     FT
028B 30 071630C0            CALL    GETC
028D 00 C4000201            LD   L  C
028F 0  E841                OR      FT
0290 0  9045                S       STCON     ARE CHARS 'ST'
0291 01 4C2002CB            BNZ     FORER     ERROR IN STMNT FORM
0293 30 071630C0            CALL    GETC
0295 00 C4000201            LD   L  C
0297 0  1008                SLA     8
0298 0  D038                STO     FT
0299 30 071630C0            CALL    GETC
029B 00 C4000201            LD   L  C
029D 0  E833                OR      FT
029E 0  9038                S       EPCON     ARE CHARS 'EP'
029F 01 4C2002CB            BNZ     FORER     NO. ERROR IN STMNT FORM
02A1 30 071630C0            CALL    GETC
02A3 01 44000555            BSI  L  BSCAN     HANDLE STEP EXPRESSION
02A5 0  7025                B       FORER     ERROR IN EXPRESSION
02A6 0  C02E        FRTN    LD      FEOS      OUTPUT EOS CODE
02A7 30 03584140            CALL    CODE
02A9 01 74010248            MDM  L  FOR,1     COMPUTE RETURN ADDR
02AB 01 4C800248            B    I  FOR       RETURN
02AD 81 40000000    ONEF    XFLC    1.
02B0 30 228990C8    STEP1   CALL    SSRCH     IS 1. IN SYMBOL TABLE
02B2 1  02AD                DC      ONEF
02B3 0  0001                DC      1
02B4 01 4C2802B9            BN      STP1B     BRANCH IF NOT
02B6 30 03584140    STP1A   CALL    CODE      OUTPUT CODE FOR 1.
02B8 0  70ED                B       FRTN      RETURN
02B9 30 018A8500    STP1B   CALL    ASYM      GET SPACE IN SYMBOL TABLE
02BB 0  D015                STO     FT        SAVE ADDR OF SPACE
02BC 01 658002D1            LDX  I1 FT        ADDR TO XR1
02BE 0  C015                LD      FCFLG     GET CONSTANT FLAG
02BF 0  D101                STO  1  1         PUT INTO ENTRY
02C0 0  1810                SRA     16        ZERO
02C1 0  D100                STO  1  0         MISC FLAGS
02C2 0  D105                STO  1  5         UNUSED WORD
02C3 0  C0E9                LD      ONEF      STORE CONSTANT 1.
02C4 0  D102                STO  1  2
02C5 0  C0E8                LD      ONEF+1
02C6 0  D103                STO  1  3
02C7 0  C0E7                LD      ONEF+2
02C8 0  D104                STO  1  4
02C9 0  18D0                XCH                ELEMENT ID TO ACC
02CA 0  70EB                B       STP1A
02CB 0  610D        FORER   LDX  1  13
02CC 30 02159640            CALL    BERR
02CE 01 4C800248            B    I  FOR       GIVE ERROR RETURN
02D0 0  0003        FK3     DC      3
02D1 0  0000        FT      DC      0         TEMPORARY
02D2 0  0028        FEQ     DC      /28       '='
02D3 0  1D18        TOCON   DC      /1D18     'TO'
02D4 0  0002        FCFLG   DC      2         CONSTANT FLAG
02D5 0  003F        FEOS    DC      /3F
02D6 0  1C1D        STCON   DC      /1C1D     'ST'
02D7 0  0E19        EPCON   DC      /0E19     'EP'
02D8 0  1000        FORSK   DC      /1000
02D9    0010                BSS     16
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                        * NEXT                                                  BCOM2660
02E9 1   02EA           NXAD  DC       *                                        BCOM2665
02EA 0   0017                 DC       /17                                      BCOM2670
02EB 0   000E                 DC       /E                                       BCOM2675
02EC 0   0021                 DC       /21                                      BCOM2680
02ED 0   001D                 DC       /1D                                      BCOM2685
02EE 0   003F                 DC       /3F                                      BCOM2690
02EF 0   0000           NEXT  DC       *-*                                      BCOM2695
02F0 00  74000203             MDM   L  DBUG,0                                   BCOM2700
02F2 0   7003                 B        *+3                                      BCOM2705
02F3 0   C0F5                 LD       NXAD                                     BCOM2710
02F4 30  025A48C0             CALL     BOUT                                     BCOM2715
02F6 30  078A8501             CALL     GSYMA     GET INDEX VARIABLE             BCOM2720
02F8 0   7033                 B        NXTER     ERROR IN VARIABLE              BCOM2725
02F9 0   7001                 B        *+1       VARIABLE OK                    BCOM2730
02FA 0   7031                 B        NXTER     FCN RTN FROM ROUTINE           BCOM2735
02FB 0   D032                 STO      NT1       SAVE TEMPORARILY               BCOM2740
02FC 30  17597000             CALL     POP       POP UP FOR STACK               BCOM2745
02FE 1   02D8                 DC       FORSK                                    BCOM2750
02FF 0   7027                 B        NXER2     NEXT WITHOUT FOR               BCOM2755
0300 0   D02E                 STO      NT2       SAVE TOP VAR FROM STACK        BCOM2760
0301 0   902C                 S        NT1       COMPARE WITH VAR IN NEXT       BCOM2765
0302 01  4C200322             BNZ      NXER1     ERROR IF NOT SAME              BCOM2770
0304 00  C4000201             LD    L  C         GET NEXT CHAR                  BCOM2775
0306 01  940002D5             S     L  FEOS      SHOULD BE EOS                  BCOM2780
0308 01  4C20032C             BNZ      NXTER     ERROR IF NOT                   BCOM2785
030A 30  17597000             CALL     POP       POP UP ADDRESS OF 'FOR'        BCOM2790
030C 1   02D8                 DC       FORSK                                    BCOM2795
030D 0   7019                 B        NXER2                                    BCOM2800
030E 00  D4800206             STO   I  SREC      PUT INTO STMNT CODE            BCOM2805
0310 0   D001                 STO      *+1                                      BCOM2810
0311 00  66000000             LDX   L2 *-*                                      BCOM2815
0313 00  C4000206             LD    L  SREC      PUT ADDR OF 'NEXT' INTO        BCOM2820
                        *                        CODE FOR 'FOR'                 BCOM2825
0315 0   90BA                 S        FK3                                      BCOM2830
0316 0   D209                 STO    2 9                                        BCOM2835
0317 00  74010206             MDM   L  SREC,1    UPDATE POINTERS                BCOM2840
0319 00  74010207             MDM   L  LREC,1                                   BCOM2845
031B 0   C012                 LD       NT1       GET VAR CODE                   BCOM2850
031C 30  03584140             CALL     CODE      OUTPUT TO STMNT RECORD         BCOM2855
031E 01  740102EF             MDM   L  NEXT,1                                   BCOM2860
0320 01  4C8002EF             B     I  NEXT      RETURN                         BCOM2865
0322 0   C00C           NXER1 LD       NT2                                      BCOM2870
0323 30  17922200             CALL     PUSH                                     BCOM2875
0325 1   02D8                 DC       FORSK                                    BCOM2880
0326 0   1000                 NOP                IMPOSSIBLE ERROR               BCOM2885
0327 0   610E           NXER2 LDX    1 14                                       BCOM2890
0328 30  02159640       NXER3 CALL     BERR                                     BCOM2895
032A 01  4C8002EF             B     I  NEXT      ERROR RETURN                   BCOM2900
032C 0   610F           NXTER LDX    1 15                                       BCOM2905
032D 0   70FA                 B        NXER3                                    BCOM2910
032E 0   0000           NT1   DC       0                                        BCOM2915
032F 0   0000           NT2   DC       0                                        BCOM2920
                        * REM                                                   BCOM2925
0330 0   0000           REM   DC       *-*                                      BCOM2930
0331 00  74000203             MDM   L  DBUG,0                                   BCOM2935
0333 0   7003                 B        *+3                                      BCOM2940
0334 0   C006                 LD       RMAD                                     BCOM2945
0335 30  025A48C0             CALL     BOUT                                     BCOM2950
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0337 01 74010330          MDM   L  REM,1                    BCOM2955
0339 01 4C800330          B     I  REM                      BCOM2960
033B 1  033C        RMAD  DC       *                        BCOM2965
033C 0  001B              DC       /1B                      BCOM2970
033D 0  000E              DC       /E                       BCOM2975
033E 0  0016              DC       /16                      BCOM2980
033F 0  003F              DC       /3F                      BCOM2985
                    * GOSUB                                 BCOM2990
0340 0  0000        GOSUB DC       *-*                      BCOM2995
0341 00 74000203          MDM   L  DBUG,0                   BCOM3000
0343 0  7003              B        *+3                      BCOM3005
0344 0  C011              LD       GSAD                     BCOM3010
0345 30 025A48C0          CALL     BOUT                     BCOM3015
0347 30 074D5000          CALL     GLN                      BCOM3020
0349 0  700A              B        GSER                     BCOM3025
034A 30 03584140          CALL     CODE                     BCOM3030
034C 01 C4000097          LD    L  EOS                      BCOM3035
034E 30 03584140          CALL     CODE                     BCOM3040
0350 01 74010340          MDM   L  GOSUB,1                  BCOM3045
0352 01 4C800340          B     I  GOSUB                    BCOM3050
0354 01 4C800340    GSER  B     I  GOSUB                    BCOM3055
0356 1  0357        GSAD  DC       *                        BCOM3060
0357 0  0010              DC       /10                      BCOM3065
0358 0  0018              DC       /18                      BCOM3070
0359 0  001C              DC       /1C                      BCOM3075
035A 0  001E              DC       /1E                      BCOM3080
035B 0  000B              DC       /B                       BCOM3085
035C 0  003F              DC       /3F                      BCOM3090
                    * RETURN                                BCOM3095
035D 0  0000        RETRN DC       *-*                      BCOM3100
035E 00 74000203          MDM   L  DBUG,0                   BCOM3105
0360 0  7003              B        *+3                      BCOM3110
0361 0  C006              LD       RTAD                     BCOM3115
0362 30 025A48C0          CALL     BOUT                     BCOM3120
0364 01 7401035D          MDM   L  RETRN,1                  BCOM3125
0366 01 4C80035D          B     I  RETRN                    BCOM3130
0368 1  0369        RTAD  DC       *                        BCOM3135
0369 0  001B              DC       /1B                      BCOM3140
036A 0  000E              DC       /E                       BCOM3145
036B 0  001D              DC       /1D                      BCOM3150
036C 0  001E              DC       /1E                      BCOM3155
036D 0  001B              DC       /1B                      BCOM3160
036E 0  0017              DC       /17                      BCOM3165
036F 0  003F              DC       /3F                      BCOM3170
                    * DIM                                   BCOM3175
0370 1  0371        DIMAD DC       *                        BCOM3180
0371 0  000D              DC       /D                       BCOM3185
0372 0  0012              DC       /12                      BCOM3190
0373 0  0016              DC       /16                      BCOM3195
0374 0  003F              DC       /3F                      BCOM3200
0375 0  0000        DIM   DC       *-*                      BCOM3205
0376 00 74000203          MDM   L  DBUG,0                   BCOM3210
0378 0  7003              B        *+3                      BCOM3215
0379 0  C0F6              LD       DIMAD                    BCOM3220
037A 30 025A48C0          CALL     BOUT                     BCOM3225
037C 0  7002              B        *+2                      BCOM3230
037D 30 071630C0    DM05  CALL     GETC                     BCOM3235
037F 30 078A8501          CALL     GSYMA                    BCOM3240
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0381 0  703B                B       DMER                                    BCOM3245
0382 0  7001                B       *+1                                     BCOM3250
0383 0  7039                B       DMER                                    BCOM3255
0384 30 14057000            CALL    MAP                                     BCOM3260
0386 0  D001                STO     *+1                                     BCOM3265
0387 00 65000000            LDX  L1 *-*                                     BCOM3270
0389 00 C4000201            LD   L  C                                       BCOM3275
038B 0  902D                S       LPAR     IS NEXT CHAR (                 BCOM3280
038C 01 4C2003BD            BNZ     DMER                                    BCOM3285
038E 30 071630C0            CALL    GETC                                    BCOM3290
0390 0  4031                BSI     GNUM                                    BCOM3295
0391 01 4C0803BD            BNP     DMER                                    BCOM3300
0393 0  D103                STO   1 3                                       BCOM3305
0394 00 C4000201            LD   L  C                                       BCOM3310
0396 0  9024                S       LCOM     IS NEXT CHAR COMMA             BCOM3315
0397 01 4C1803B1            BZ      COMA                                    BCOM3320
0399 00 C4000201     DM10   LD   L  C                                       BCOM3325
039B 0  901E                S       RPAR     IS NEXT CHAR )                 BCOM3330
039C 01 4C2003BD            BNZ     DMER     NO, ERROR                      BCOM3335
039E 0  C101                LD    1 1                                       BCOM3340
039F 0  E818                OR      AFLG     SET ARRAY FLAG                 BCOM3345
03A0 0  D101                STO   1 1                                       BCOM3350
03A1 30 071630C0            CALL    GETC                                    BCOM3355
03A3 00 C4000201            LD   L  C                                       BCOM3360
03A5 0  9015                S       LCOM                                    BCOM3365
03A6 01 4C18037D            BZ      DM05     YES, GET ANOTHER NAME          BCOM3370
03A8 00 C4000201            LD   L  C                                       BCOM3375
03AA 0  9011                S       GEOS                                    BCOM3380
03AB 01 4C2003BD            BNZ     DMER     ERROR IF NOT EOS               BCOM3385
03AD 01 74010375            MDM  L  DIM,1                                   BCOM3390
03AF 01 4C800375            B    I  DIM                                     BCOM3395
03B1 30 071630C0     COMA   CALL    GETC                                    BCOM3400
03B3 0  400E                BSI     GNUM                                    BCOM3405
03B4 01 4C0803BD            BNP     DMER                                    BCOM3410
03B6 0  D104                STO   1 4                                       BCOM3415
03B7 0  70E1                B       DM10                                    BCOM3420
03B8 0  0020         AFLG   DC      32                                      BCOM3425
03B9 0  0029         LPAR   DC      /29      LEFT PAREN                     BCOM3430
03BA 0  002A         RPAR   DC      /2A      RIGHT PAREN                    BCOM3435
03BB 0  002C         LCOM   DC      /2C      COMMA                          BCOM3440
03BC 0  003F         GEOS   DC      /3F                                     BCOM3445
03BD 0  6110         DMER   LDX   1 16                                      BCOM3450
03BE 30 02159640            CALL    BERR                                    BCOM3455
03C0 01 4C800375            B    I  DIM                                     BCOM3460
03C2 0  0000         GNUM   DC      *-*                                     BCOM3465
03C3 00 C4000202            LD   L  TYPE                                    BCOM3470
03C5 01 4C2003BD            BNZ     DMER                                    BCOM3475
03C7 00 C4000201            LD   L  C                                       BCOM3480
03C9 0  D00E                STO     GN                                      BCOM3485
03CA 30 071630C0     GNLP   CALL    GETC                                    BCOM3490
03CC 01 4C2003D5            BNZ     GQ                                      BCOM3495
03CE 0  C009                LD      GN                                      BCOM3500
03CF 0  A009                M       GTEN                                    BCOM3505
03D0 0  18D0                XCH                                             BCOM3510
03D1 00 84000201            A    L  C                                       BCOM3515
03D3 0  D004                STO     GN                                      BCOM3520
03D4 0  70F5                B       GNLP                                    BCOM3525
03D5 0  C002         GQ     LD      GN                                      BCOM3530
03D6 01 4C8003C2            B    I  GNUM                                    BCOM3535
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03D8 0  0000          GN     DC       0                                    BCOM3540
03D9 0  000A          GTEN   DC       10                                   BCOM3545
                      * DEF                                                BCOM3550
03DA 1  03DB          DEFAD  DC       *                                    BCOM3555
03DB 0  000D                 DC       /D                                   BCOM3560
03DC 0  000E                 DC       /E                                   BCOM3565
03DD 0  000F                 DC       /F                                   BCOM3570
03DE 0  003F                 DC       /3F                                  BCOM3575
03DF 0  0000          DEF    DC       *-*                                  BCOM3580
03E0 00 74000203             MDM   L  DBUG,0                               BCOM3585
03E2 0  7003                 B        *+3                                  BCOM3590
03E3 0  C0F6                 LD       DEFAD                                BCOM3595
03E4 30 025A48C0             CALL     BOUT                                 BCOM3600
03E6 0  1810                 SRA      16                                   BCOM3605
03E7 01 D400046B             STO   L  NPAR      INIT NO. OF ARGS TO ZERO   BCOM3610
03E9 30 034C5059             CALL     CLEAR     CLEAR ARG STACK            BCOM3615
03EB 1  0472                 DC       DSTK                                 BCOM3620
03EC 30 078A8501             CALL     GSYMA     GET FUNCTION NAME          BCOM3625
03EE 0  7077                 B        DFER      ERROR IN SYMBOL            BCOM3630
03EF 0  7076                 B        DFER      NOT FCN NAME               BCOM3635
03F0 30 14057000             CALL     MAP       COMPUTE ADDR OF ENTRY      BCOM3640
03F2 0  D001                 STO      *+1                                  BCOM3645
03F3 00 65000000             LDX   L1 *-*       PUT INTO XR1               BCOM3650
03F5 0  C101                 LD     1 1         GET FLAGS                  BCOM3655
03F6 0  1804                 SRA      4         IS IT USER FCN             BCOM3660
03F7 01 4C0403FE             BOD      DFOK1     YES                        BCOM3665
03F9 0  6111                 LDX    1 17        NOT USER FCN               BCOM3670
03FA 30 02159640             CALL     BERR                                 BCOM3675
03FC 01 4C8003DF             B     I  DEF                                  BCOM3680
03FE 0  C103          DFOK1  LD     1 3         GET NO. OF PARAMS          BCOM3685
03FF 01 4C280406             BN       DFOK2                                BCOM3690
0401 0  6112                 LDX    1 18        MULTIPLE DEFINITION        BCOM3695
0402 30 02159640             CALL     BERR                                 BCOM3700
0404 01 4C8003DF             B     I  DEF                                  BCOM3705
0406 00 C4000206      DFOK2  LD    L  SREC      COMPUTE REL ADDR OF        BCOM3710
0408 0  9063                 S        DK3       THIS STATEMENT             BCOM3715
0409 00 94000209             S     L  UAD       AND                        BCOM3720
040B 0  D102                 STO    1 2         STORE IN ELEMENT RECORD    BCOM3725
040C 00 C4000201             LD    L  C         GET CHAR AFTER NAME        BCOM3730
040E 0  905E                 S        DPAR      IS IT LEFT PAREN           BCOM3735
040F 01 4C20042A             BNZ      CKNP      NO, CHECK FOR ZERO PRAMS   BCOM3740
0411 30 071630C0      DF10   CALL     GETC      GET NEXT CHAR              BCOM3745
0413 30 078A8501             CALL     GSYMA     GET DUMMY ARG NAME         BCOM3750
0415 0  7050                 B        DFER      ERROR IN SYMBOL            BCOM3755
0416 0  7001                 B        *+1       VARIABLE NAME              BCOM3760
0417 0  704E                 B        DFER      ERROR, FCN NAME            BCOM3765
0418 30 17922200             CALL     PUSH      SAVE PARAM NAME            BCOM3770
041A 1  0472                 DC       DSTK      ON ARG STACK               BCOM3775
041B 0  705C                 B        DFR1                                 BCOM3780
041C 01 7401046B             MDM   L  NPAR,1    COUNT PARAMS               BCOM3785
041E 00 C4000201             LD    L  C         GET CHAR FOLLOWING ARG     BCOM3790
0420 0  904E                 S        DFCOM     IS IT COMMA                BCOM3795
0421 01 4C180411             BZ       DF10      YES, GET ANOTHER PAR       BCOM3800
0423 00 C4000201             LD    L  C         NO, SO TRY RIGHT PAREN     BCOM3805
0425 0  904A                 S        DFRP                                 BCOM3810
0426 01 4C200466             BNZ      DFER      ERROR, NOT RIGHT PAREN     BCOM3815
0428 30 071630C0             CALL     GETC      SKIP RIGHT PAREN           BCOM3820
042A 00 C4000201      CKNP   LD    L  C         GET NEXT CHAR              BCOM3825
042C 0  9044                 S        DFEQ      CHECK FOR =                BCOM3830
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042D 01 4C200466          BNZ      DFER      ERROR IF NOT =                BCOM3835
042F 0  C03B              LD       NPAR                                    BCOM3840
0430 0  D103              STO    1 3         DEFINE NO. OF PARAMS          BCOM3845
0431 01 4C180440          BZ       DF50      ZERO PARS                     BCOM3850
0433 01 6580046B          LDX   I1 NPAR      GET = OF PARAMERERS           BCOM3855
0435 30 17597000    DF20  CALL     POP       POP UP ARG NAME               BCOM3860
0437 1  0472              DC       DSTK      FROM ARG STACK                BCOM3865
0438 0  7041              B        DFR2                                    BCOM3870
0439 30 03584140          CALL     CODE      OUTPUT DUMMY ARG              BCOM3875
043B 0  C032              LD       DSTOC     OUTPUT SPECIAL STORE CODE     BCOM3880
043C 30 03584141          CALL     CODEA                                   BCOM3885
043E 0  71FF              MDX    1 -1        ALL DONE                      BCOM3890
043F 0  70F5              B        DF20      NO. POP ANOTHER ARG           BCOM3895
0440 30 071630C0    DF50  CALL     GETC      GET NEXT CHAR                 BCOM3900
0442 01 44000555          BSI   L  BSCAN     USE GENERAL SCAN ON EXPR      BCOM3905
0444 0  7021              B        DFER      ERROR IN EXPRESSION           BCOM3910
0445 01 C4000097          LD    L  EOS       OUTPUT EOS CODE               BCOM3915
0447 30 03584140          CALL     CODE                                    BCOM3920
                    * CHECK TO BE SURE END OF EXPRESSION WAS EOS          BCOM3925
0449 00 C4000201          LD    L  C                                      BCOM3930
044B 01 F4000097          EOR   L  EOS                                     BCOM3935
044D 01 4C180452          BZ       *+3                                     BCOM3940
044F 0  6106              LDX    1 6         ILLEGAL FORMULA               BCOM3945
0450 30 02159640          CALL     BERR                                    BCOM3950
                    *     TURN OFF ALL FLAGS FOR DUMMY ARGS               BCOM3955
0452 01 6680046B          LDX   I2 NPAR                                    BCOM3960
0454 0  7200              MDX    2 0                                      BCOM3965
0455 0  7001              B        *+1                                     BCOM3970
0456 0  700B              B        DUN       DONE,ZERO PARS                BCOM3975
0457 01 C6000472    DFLP  LD    L2 DSTK      GET ARG NAME                  BCOM3980
0459 30 14057000          CALL     MAP       COMPUTE ADDRESS               BCOM3985
045B 0  D001              STO      *+1                                     BCOM3990
045C 00 65000000          LDX   L1 *-*                                     BCOM3995
045E 0  1810              SRA      16                                      BCOM4000
045F 0  D101              STO    1 1         TURN OFF ALL FLAGS            BCOM4005
0460 0  72FF              MDX    2 -1                                      BCOM4010
0461 0  70F5              B        DFLP      LOOP                          BCOM4015
0462 01 740103DF    DUN   MDM   L  DEF,1     GIVE GOOD RETURN              BCOM4020
0464 01 4C8003DF          B     I  DEF                                     BCOM4025
0466 0  6113        DFER  LDX    1 19        SYNTAX ERROR                  BCOM4030
0467 30 02159640          CALL     BERR                                    BCOM4035
0469 01 4C8003DF          B     I  DEF                                     BCOM4040
046B 0  0000        NPAR  DC       0         NO. OF ARGS                   BCOM4045
046C 0  0003        DK3   DC       3                                       BCOM4050
046D 0  0029        DPAR  DC       /29       LEFT PAREN                    BCOM4055
046E 0  0009        DSTOC DC       9         SPECIAL STORE CODE            BCOM4060
046F 0  002C        DFCOM DC       /2C       COMMA                         BCOM4065
0470 0  002A        DFRP  DC       /2A       RIGHT PAREN                   BCOM4070
0471 0  0028        DFEQ  DC       /28       = SIGN                        BCOM4075
0472 0  0500        DSTK  DC       /0500     DUMMY ARG STACK               BCOM4080
0473    0005              BSS      5                                       BCOM4085
0478 0  6114        DFR1  LDX    1 20        DUMMY ARG STACK FULL          BCOM4090
0479 0  7001              B        *+1                                     BCOM4095
047A 0  6115        DFR2  LDX    1 21        DUMMY ARG STACK EMPTY         BCOM4100
047B 30 02159640          CALL     BERR                                    BCOM4105
047D 01 4C8003DF          B     I  DEF                                     BCOM4110
                    * STOP                                                BCOM4115
047F 0  0000        STOP  DC       *-*                                     BCOM4120
0480 00 74000203          MDM   L  DBUG,0                                  BCOM4125
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0482 0  7003                B       *+3                                  BCOM4130
0483 0  C006                LD      STOPA                                BCOM4135
0484 30 025A48C0            CALL    BOUT                                 BCOM4140
0486 01 7401047F            MDM  L  STOP,1                               BCOM4145
0488 01 4C80047F            B    I  STOP                                 BCOM4150
048A 1  048B          STOPA DC      *                                    BCOM4155
048B 0  001C                DC      /1C                                  BCOM4160
048C 0  001D                DC      /1D                                  BCOM4165
048D 0  0018                DC      /18                                  BCOM4170
048E 0  0019                DC      /19                                  BCOM4175
048F 0  003F                DC      /3F                                  BCOM4180
                      * END                                              BCOM4185
0490 0  0000          END   DC      *-*                                  BCOM4190
0491 00 74000203            MDM  L  DBUG,0                               BCOM4195
0493 0  7003                B       *+3                                  BCOM4200
0494 0  C00D                LD      ENDAD                                BCOM4205
0495 30 025A48C0            CALL    BOUT                                 BCOM4210
0497 30 17597000            CALL    POP       CHECK FOR DANGLING 'FOR'   BCOM4215
0499 1  02D8                DC      FORSK                                BCOM4220
049A 0  7003                B       *+3       OK IF STACK IS EMPTY       BCOM4225
049B 0  613A                LDX   1 58        'FOR' WITHOUT 'NEXT'       BCOM4230
049C 30 02159640            CALL    BERR                                 BCOM4235
049E 01 74010490            MDM  L  END,1                                BCOM4240
04A0 01 4C800490            B    I  END                                  BCOM4245
04A2 1  04A3          ENDAD,DC      *                                    BCOM4250
04A3 0  000E                DC      /E                                   BCOM4255
04A4 0  0017                DC      /17                                  BCOM4260
04A5 0  000D                DC      /D                                   BCOM4265
04A6 0  003F                DC      /3F                                  BCOM4270
                      * ON                                               BCOM4275
04A7 0  0000          ON    DC      *-*                                  BCOM4280
04A8 00 74000203            MDM  L  DBUG,0                               BCOM4285
04AA 0  7003                B       *+3                                  BCOM4290
04AB 0  C006                LD      ONAD                                 BCOM4295
04AC 30 025A48C0            CALL    BOUT                                 BCOM4300
04AE 01 740104A7            MDM  L  ON,1                                 BCOM4305
04B0 01 4C8004A7            B    I  ON                                   BCOM4310
04B2 1  04B3          ONAD  DC      *                                    BCOM4315
04B3 0  0018                DC      /18                                  BCOM4320
04B4 0  0017                DC      /17                                  BCOM4325
04B5 0  003F                DC      /3F                                  BCOM4330
                      * VOID                                             BCOM4335
04B6 0  0000          VOID  DC      *-*                                  BCOM4340
04B7 00 74000203            MDM  L  DBUG,0                               BCOM4345
04B9 0  7003                B       *+3                                  BCOM4350
04BA 0  C006                LD      VOIDA                                BCOM4355
04BB 30 025A48C0            CALL    BOUT                                 BCOM4360
04BD 01 740104B6            MDM  L  VOID,1                               BCOM4365
04BF 01 4C8004B6            B    I  VOID                                 BCOM4370
04C1 1  04C2          VOIDA DC      *                                    BCOM4375
04C2 0  001F                DC      /1F                                  BCOM4380
04C3 0  0018                DC      /18                                  BCOM4385
04C4 0  0012                DC      /12                                  BCOM4390
04C5 0  000D                DC      /D                                   BCOM4395
04C6 0  003F                DC      /3F                                  BCOM4400
                      * DEBUG                                            BCOM4405
04C7 0  0000          DEBUG DC      *-*                                  BCOM4410
04C8 01 740104C7            MDM  L  DEBUG,1                              BCOM4415
04CA 30 071630C0            CALL    GETC                                 BCOM4420
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04CC 00 C4000201          LD    L  C                                  BCOM4425
04CE 0  F004              EOR      DN                                  BCOM4430
04CF 00 D4000203          STO   L  DBUG                                BCOM4435
04D1 01 4C8004C7          B     I  DEBUG                               BCOM4440
04D3 0  0017        DN    DC       /17        N                       BCOM4445
                    * TYPE                                             BCOM4450
04D4 0  0000        KEYB  DC       *-*                                 BCOM4455
04D5 01 740104D4          MDM   L  KEYB,1                              BCOM4460
04D7 30 071630C0          CALL     GETC                                BCOM4465
04D9 00 C4000201          LD    L  C                                  BCOM4470
04DB 0  F004              EOR      DF                                  BCOM4475
04DC 30 03584141          CALL     CODEA                               BCOM4480
04DE 01 4C8004D4          B     I  KEYB                                BCOM4485
04E0 0  000F        DF    DC       /F                                  BCOM4490
                    * ROUTINE TO LINK STATEMENT NUMBERS                BCOM4495
04E1 0  0000        BLINK DC       *-*                                 BCOM4500
04E2 00 65800209          LDX   I1 UAD                                 BCOM4505
04E4 0  C104              LD     1 PGOL                                BCOM4510
04E5 0  1890              SRT      16                                  BCOM4515
04E6 0  A81E              D        LK6                                 BCOM4520
04E7 0  D01E              STO      SCNT                                BCOM4525
04E8 0  C103              LD     1 PGO                                 BCOM4530
04E9 0  9104              S      1 PGOL                                BCOM4535
04EA 01 D400054F          STO   L  RBOT                                BCOM4540
04EC 00 84000209          A     L  UAD                                 BCOM4545
04EE 0  D018              STO      BPGO       BASE ADDR OF SYM TABLE  BCOM4550
04EF 0  C101              LD     1 ST                                  BCOM4555
04F0 0  8102              A      1 STL                                 BCOM4560
04F1 01 D400054D          STO   L  ARB                                 BCOM4565
                    * START SEARCH FOR STATEMENT NUMBERS               BCOM4570
04F3 01 65800507          LDX   I1 BPGO                                BCOM4575
04F5 0  C101        LSLP  LD     1 1                                   BCOM4580
04F6 0  1802              SRA      2                                   BCOM4585
04F7 01 4C04050B          BOD      GDF        BRANCH IF STMNT NUMBER  BCOM4590
04F9 0  1803              SRA      3                                   BCOM4595
04FA 01 4C040530          BOD      ARRAY                               BCOM4600
04FC 0  7106        LINA  MDX    1 6                                   BCOM4605
04FD 0  1000              NOP                 IN CASE OF SKIP          BCOM4610
04FE 01 74FF0506          MDM   L  SCNT,-1                             BCOM4615
0500 0  70F4              B        LSLP                                BCOM4620
0501 01 740104E1          MDM   L  BLINK,1                             BCOM4625
0503 01 4C8004E1          B     I  BLINK                               BCOM4630
0505 0  0006        LK6   DC       6                                   BCOM4635
0506 0  0000        SCNT  DC       0                                   BCOM4640
0507 0  0000        BPGO  DC       0                                   BCOM4645
0507                BSTM  EQU      BPGO                                BCOM4650
0508 0  0000        LSNO  DC       0                                   BCOM4655
0507                LKT   EQU      BPGO                                BCOM4660
0509 0  00FF        MFF   DC       /FF                                 BCOM4665
050A 0  000D        LNDT  DC       13                                  BCOM4670
050B 00 66800209    GDF   LDX   I2 UAD                                 BCOM4675
050D 0  C201              LD     2 ST                                  BCOM4680
050E 00 84000209          A     L  UAD                                 BCOM4685
0510 0  D0F6              STO      BSTM                                BCOM4690
0511 01 66800507          LDX   I2 BSTM                                BCOM4695
0513 0  C102              LD     1 2                                   BCOM4700
0514 0  D0F3              STO      LSNO                                BCOM4705
0515 0  C202        GDFL  LD     2 2                                   BCOM4710
0516 0  F0F1              EOR      LSNO                                BCOM4715
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0517 01 4C20051F          BNZ      NYET                                  BCOM4720
0519 0  6AED              STX    2 LKT                                   BCOM4725
051A 0  C0EC              LD       LKT                                   BCOM4730
051B 00 94000209          S      L UAD                                   BCOM4735
051D 0  D103              STO    1 3                                     BCOM4740
051E 0  70DD              B        LINA                                  BCOM4745
051F 0  C201        NYET  LD     2 1                                     BCOM4750
0520 0  1888              SRT      8                                     BCOM4755
0521 0  E0E7              AND      MFF                                   BCOM4760
0522 0  90E7              S        LNDT                                  BCOM4765
0523 01 4C18052B          BZ       UERR                                  BCOM4770
0525 0  1088              SLT      8                                     BCOM4775
0526 0  E0E2              AND      MFF                                   BCOM4780
0527 0  D001              STO      *+1                                   BCOM4785
0528 00 76000000          MDX   L2 *-*                                   BCOM4790
052A 0  70EA              B        GDFL                                  BCOM4795
052B 0  6116        UERR  LDX    1 22                                    BCOM4800
052C 30 02159640          CALL     BERR                                  BCOM4805
052E 01 4C8004E1          B      I BLINK                                 BCOM4810
0530 0  C103        ARRAY LD     1 3                                     BCOM4815
0531 0  A01A              M        BL3                                   BCOM4820
0532 0  C104              LD     1 4                                     BCOM4825
0533 01 4C080537          BNP      *+2                                   BCOM4830
0535 0  18D0              XCH                                            BCOM4835
0536 0  A104              M      1 4                                     BCOM4840
0537 0  18D0              XCH                                            BCOM4845
0538 0  D015              STO      ARYL                                  BCOM4850
0539 0  C013              LD       ARB                                   BCOM4855
053A 0  D102              STO    1 2                                     BCOM4860
053B 0  8012              A        ARYL                                  BCOM4865
053C 0  D010              STO      ARB                                   BCOM4870
053D 0  9011              S        RBOT                                  BCOM4875
053E 01 4C300550          BP       UERR2                                 BCOM4880
0540 0  1810              SRA      16                                    BCOM4885
0541 01 6680054D          LDX   I2 ARB                                   BCOM4890
05[illegible]3 00 76800209 MDX   I2 UAD                                   BCOM4895
0545 0  72FF              MDX    2 -1                                    BCOM4900
0546 0  D200              STO    2 0                                     BCOM4905
0547 01 74FF054E          MDM   L  ARYL,-1                               BCOM4910
0549 0  70FB              B        *-5                                   BCOM4915
054A 01 4C0004FC          B      L LINA                                  BCOM4920
054C 0  0003        BL3   DC       3                                     BCOM4925
054D 0  0000        ARB   DC       0                                     BCOM4930
054E 0  0000        ARYL  DC       0                                     BCOM4935
054F 0  0000        RBOT  DC       0                                     BCOM4940
0550 0  6117        UERR2 LDX    1 23                                    BCOM4945
0551 30 02159640          CALL     BERR                                  BCOM4950
0553 01 4C8004E1          B      I BLINK                                 BCOM4955
                    * EXPRESSION SCAN SUBROUTINE                         BCOM4960
                    * STOPS ON ZERO LEVEL COMMA, =, RELATION, TO, STEP,  BCOM4965
                    * GOTO, THEN OF EOS                                  BCOM4970
                    * INITIAL CHARACTER OF EXPRESSION IS UNDER SCAN AT   BCOM4975
                    * ENTRY TO BSCAN                                     BCOM4980
0555 0  0000        BSCAN DC       *-*                                   BCOM4985
0556 01 6D000683          STX   L1 XR1+1      SAVE XR1                   BCOM4990
0558 01 6E000685          STX   L2 XR2+1      SAVE XR2                   BCOM4995
055A 30 034C5059          CALL     CLEAR                                 BCOM5000
055C 1  06B8              DC       OPS        CLEAR THE OP STACK         BCOM5005
055D 30 034C5059          CALL     CLEAR                                 BCOM5010
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055F 1  06EB                DC      FNS      CLEAR THE FUNCTION STACK     BCOM5015
0560 00 C4000202            LD   L  TYPE     GET TYPE OF CHAR UNDER SCAN  BCOM5020
0562 0  7002                B       *+2      SKIP READ                    BCOM5025
0563 30 071630C0     SCN1   CALL    GETC     READ NEXT CHARACTER          BCOM5030
0565 01 4C10058C            BNN     SCN10    BRANCH IF ALPHA-NUMERIC      BCOM5035
0567 00 65800201            LDX  I1 C        GET CHAR CODE TO XR1         BCOM5040
0569 0  71DC                MDX   1 -36      IS IT PLUS SIGN              BCOM5045
056A 0  7001                B       *+1      NO                           BCOM5050
056B 0  70F7                B       SCN1     YES, IGNORE IT               BCOM5055
056C 0  71FF                MDX   1 -1       IS IT MINUS SIGN             BCOM5060
056D 0  7007                B       SCN3     NO, GO TEST FOR OTHERS       BCOM5065
056E 0  C019                LD      UMIN     PUT UNDARY MINUS ON STACK    BCOM5070
056F 30 17922200            CALL    PUSH                                  BCOM5075
0571 1  06B8                DC      OPS                                   BCOM5080
0572 0  706C                B       SERR1    ERROR, STACK OVERFLOW        BCOM5085
0573 30 071630C0     SCN2   CALL    GETC     GET NEXT CHRACTER            BCOM5090
0575 00 C4000202     SCN3   LD   L  TYPE     CHECK CHARACTER TYPE         BCOM5095
0577 01 4C10058C            BNN     SCN10    BRANCH IF ALPHA-NUMERIC      BCOM5100
0579 00 C4000201            LD   L  C        GET CHARACTER                BCOM5105
057B 0  900E                S       LPT      IS IT LEFT PAREN             BCOM5110
057C 01 4C200584            BNZ     SCN4     NO                           BCOM5115
057E 0  C00A                LD      LPC      GET LEFT PAREN CODE          BCOM5120
057F 30 17922200            CALL    PUSH     PUT IT ON OP STACK           BCOM5125
0581 1  06B8                DC      OPS                                   BCOM5130
0582 0  705C                B       SERR1    ERROR, STACK OVERFLOW        BCOM5135
0583 0  70DF                B       SCN1     CONTINUE SCAN                BCOM5140
0584 0  9006         SCN4   S       PET      IS IT PERIOD                 BCOM5145
0585 01 4C18058E            BZ      SCN11    YES, GO CONVERT NUMBER       BCOM5150
0587 0  7065                B       SERRB    ERROR                        BCOM5155
0588 0  0005         UMIN   DC      5        UNARY MINUS CODE             BCOM5160
0589 0  0007         LPC    DC      7        LEFT PAREN CODE              BCOM5165
058A 0  0029         LPT    DC      /29                                   BCOM5170
058B 0  0002         PET    DC      2                                     BCOM5175
058C 01 4C3005B1     SCN10  BP      SCN20    BRANCH IF ALPHABETIC         BCOM5180
058E 30 070D6540     SCN11  CALL    GCON     CONVERT CONSTANT             BCOM5185
0590 0  7050                B       SERR2    ERROR IN CONSTANT            BCOM5190
0591 20 058A3580            LIBF    ESTO     SAVE CONSTANT FROM FAC       BCOM5195
0592 1  05AB                DC      AREA                                  BCOM5200
0593 30 228990C8            CALL    SSRCH    LOOK UP CONSTANT IN SYMBOL   BCOM5205
0595 1  05AB                DC      AREA                                  BCOM5210
0596 0  0001                DC      1                                     BCOM5215
0597 01 4C28059C            BN      SCN15    NOT IN TABLE                 BCOM5220
0599 30 03584140     SCN12  CALL    CODE     ADD TO OUTPUT STRING         BCOM5225
059B 0  705C                B       SC220    GO LOOK FOR OPERATOR         BCOM5230
059C 30 018A8500     SCN15  CALL    ASYM     GET SPACE IN SYMBOL TABLE    BCOM5235
059E 0  D80F                STD     DT       SAVE ADDRESS AND ID          BCOM5240
059F 01 658005AE            LDX  I1 DT       ADDRESS TO XR1               BCOM5245
05A1 0  C00E                LD      CFLG     GET CONSTANT FLAG            BCOM5250
05A2 0  D101                STO   1 1        PUT IN TABLE ENTRY           BCOM5255
05A3 0  C007                LD      AREA                                  BCOM5260
05A4 0  D102                STO   1 2                                     BCOM5265
05A5 0  C006                LD      AREA+1                                BCOM5270
05A6 0  D103                STO   1 3                                     BCOM5275
05A7 0  C005                LD      AREA+2                                BCOM5280
05A8 0  D104                STO   1 4                                     BCOM5285
05A9 0  C005                LD      DT+1                                  BCOM5290
05AA 0  70EE                B       SCN12                                 BCOM5295
05AB    0003         AREA   BSS     3                                     BCOM5300
05AE    0002         DT     BSS  E  2                                     BCOM5305
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05AE                    T      EQU     DT                                          BCOM5310
05B0 0   0002           CFLG   DC      2                                           BCOM5315
                        * HANDLE SYMBOL                                            BCOM5320
05B1 30  078A8501       SCN20  CALL    GSYMA     GET SYMBOL                        BCOM5325
05B3 0   702F                  B       SERR3     ERROR IN SYMBOL                   BCOM5330
05B4 0   7001                  B       *+1       RETURN HERE FOR VARIABLE          BCOM5335
05B5 0   7017                  B       SCFN      HERE FOR FUNCTION NAME            BCOM5340
05B6 0   D0F7                  STO     T                                           BCOM5345
05B7 00  C4000201              LD   L  C                                           BCOM5350
05B9 0   90D0                  S       LPT       IS IT LEFT PAREN                  BCOM5355
05BA 01  4C2005F2              BNZ     SCN21     NO PUT VAR IN OUTPUT              BCOM5360
05BC 0   C0F1           SC21A  LD      T                                           BCOM5365
05BD 30  17922200              CALL    PUSH      PUT NAME ON STACK                 BCOM5370
05BF 1   06EB                  DC      FNS                                         BCOM5375
05C0 0   7024                  B       SERR4                                       BCOM5380
05C1 01  C4000095              LD   L  K1                                          BCOM5385
05C3 30  17922200              CALL    PUSH      INITIAL PRAM COUNT OF 1           BCOM5390
05C5 1   06EB                  DC      FNS                                         BCOM5395
05C6 0   701E                  B       SERR4                                       BCOM5400
05C7 0   C016                  LD      FLPC      FUNCTION LEFT PAREN CODE          BCOM5405
05C8 30  17922200              CALL    PUSH                                        BCOM5410
05CA 1   06B8                  DC      OPS       PUT ON OP STACK                   BCOM5415
05CB 0   7013                  B       SERR1                                       BCOM5420
05CC 0   7096                  B       SCN1      CONTINUE                          BCOM5425
05CD 0   D0E0           SCFN   STO     T         SAVE ELEMENT ID                   BCOM5430
05CE 00  C4000201              LD   L  C                                           BCOM5435
05D0 0   90B9                  S       LPT       IS NEXT CHAR '('                  BCOM5440
05D1 01  4C1805BC              BZ      SC21A     YES                               BCOM5445
05D3 01  C4000647              LD   L  FNOP                                        BCOM5450
05D5 30  03584140              CALL    CODE      OUTPUT FUNCTION OP                BCOM5455
05D7 0   C0D6                  LD      T                                           BCOM5460
05D8 30  03584140              CALL    CODE      OUTPUT FUNCTION NAME              BCOM5465
05DA 0   1810                  SRA     16                                          BCOM5470
05DB 30  03584141              CALL    CODEA     OUTPUT ZERO PARAM COUNT           BCOM5475
05DD 0   701A                  B       SC220     GO LOOK FOR OP                    BCOM5480
05DE 0   0008           FLPC   DC      8         FUNCTION LEFT PAREN               BCOM5485
                        * ERRORS                                                   BCOM5490
05DF 0   611A           SERR1  LDX   1 26                                          BCOM5495
05E0 0   700D                  B       SERR                                        BCOM5500
05E1 0   611B           SERR2  LDX   1 27                                          BCOM5505
05E2 0   700B                  B       SERR                                        BCOM5510
05E3 0   611C           SERR3  LDX   1 28                                          BCOM5515
05E4 0   7009                  B       SERR                                        BCOM5520
05E5 0   611D           SERR4  LDX   1 29                                          BCOM5525
05E6 0   7007                  B       SERR                                        BCOM5530
05E7 0   611E           SERR5  LDX   1 30                                          BCOM5535
05E8 0   7005                  B       SERR                                        BCOM5540
05E9 0   611F           SERR6  LDX   1 31                                          BCOM5545
05EA 0   7003                  B       SERR                                        BCOM5550
05EB 0   6120           SERR7  LDX   1 32                                          BCOM5555
05EC 0   7001                  B       SERR                                        BCOM5560
05ED 0   6124           SERRB  LDX   1 36                                          BCOM5565
05EE 30  02159640       SERR   CALL    BERR                                        BCOM5570
05F0 01  4C000682              B    L  XR1                                         BCOM5575
05F2 0   C0BB           SCN21  LD      T                                           BCOM5580
05F3 30  03584140              CALL    CODE                                        BCOM5585
05F5 0   7002                  B       SC220                                       BCOM5590
                        * NOW LOOK FOR OPERATOR                                    BCOM5595
05F6 30  071630C0       SC215  CALL    GETC      GET NEXT CHARACTER                BCOM5600
```

```
05F8 00 C4000202     SC220 LD    L  TYPE       GET TYPE OF CHAR          BCOM5605
05FA 01 4C100674           BNN       SC500      DONE WITH EXPRESSION      BCOM5610
05FC 00 65800201           LDX   I1  C          GET CHAR CODE             BCOM5615
05FE 0  71CC               MDX    1  -52                                 BCOM5620
05FF 0  7074               B         SC500      NO SKIP = EOS             BCOM5625
0600 01 4D800612           B     I1  TAB        BRANCH TO HANDLE OP       BCOM5630
                     * BRANCH TABLE FOR OPERATORS                         BCOM5635
0602 1  0613               DC        SC240      +                         BCOM5640
0603 1  0613               DC        SC240      -                         BCOM5645
0604 1  0613               DC        SC240      /                         BCOM5650
0605 1  061E               DC        SC270      *                         BCOM5655
0606 1  0674               DC        SC500      =                         BCOM5660
0607 1  05E7               DC        SERR5      (                         BCOM5665
0608 1  0633               DC        SC2A0      )                         BCOM5670
0609 1  05E7               DC        SERR5      .                         BCOM5675
060A 1  065C               DC        SC2C0      ,                         BCOM5680
060B 1  0674               DC        SC500      '                         BCOM5685
060C 1  05E7               DC        SERR5      AMPERSAND                 BCOM5690
060D 1  05E7               DC        SERR5      $                         BCOM5695
060E 1  05E7               DC        SERR5      BLANK                     BCOM5700
060F 1  0674               DC        SC500                                BCOM5705
0610 1  0674               DC        SC500                                BCOM5710
0611 1  0674               DC        SC500                                BCOM5715
0612 1  0674               DC        SC500                                BCOM5720
0612                 TAB   EQU       *-1                                  BCOM5725
                     * ARITHMETIC OP +,-,/                                BCOM5730
0613 0  7110         SC240 MDX    1  16                                   BCOM5735
0614 0  1000               NOP                                            BCOM5740
0615 0  6998               STX    1  T                                    BCOM5745
0616 0  C097               LD        T                                    BCOM5750
0617 0  4071         SC250 BSI       MVOP       ADD TO STACK              BCOM5755
0618 30 17922200           CALL      PUSH                                 BCOM5760
061A 1  06B8               DC        OPS                                  BCOM5765
061B 0  70C3               B         SERR1                                BCOM5770
061C 01 4C000573           B     L   SCN2                                 BCOM5775
061E 30 071630C0     SC270 CALL      GETC                                 BCOM5780
0620 00 C4000201           LD    L   C                                    BCOM5785
0622 0  900B               S         AT         CHECK FOR **              BCOM5790
0623 01 4C180631           BZ        SC280                                BCOM5795
0625 0  C009               LD        AC                                   BCOM5800
0626 01 44000689           BSI   L   MVOP                                 BCOM5805
0628 30 17922200           CALL      PUSH                                 BCOM5810
062A 1  06B8               DC        OPS                                  BCOM5815
062B 0  70B3               B         SERR1                                BCOM5820
062C 01 4C000575           B     L   SCN3       CONTINUE SCAN, NO READ    BCOM5825
062E 0  0027         AT    DC        /27        *                         BCOM5830
062F 0  0003         AC    DC        3          OP CODE FOR *             BCOM5835
0630 0  0004         POWC  DC        4          EXPONENTIATION OP         BCOM5840
0631 0  C0FF         SC280 LD        POWC                                 BCOM5845
0632 0  70E4               B         SC250                                BCOM5850
                     * RIGHT PAREN                                        BCOM5855
0633 30 17597000     SC2A0 CALL      POP        POP UP OP STACK           BCOM5860
0635 1  06B8               DC        OPS                                  BCOM5865
0636 0  70B2               B         SERR6      ERROR, EMPTY STACK        BCOM5870
0637 01 D40005AE           STO   L   T          SAVE OP                   BCOM5875
0639 01 94000589           S     L   LPC        IS IT LEFT PAREN          BCOM5880
063B 01 4C1805F6           BZ        SC215      OK, GO LOOK FOR OP        BCOM5885
063D 01 C40005AE           LD    L   T                                    BCOM5890
063F 0  909E               S         FLPC       IS IT FUNCTION LEFT PAREN BCOM5895
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0640 01 4C180648          BZ      SC2A5     YES                                BCOM5900
0642 01 C40005AE          LD   L  T                                            BCOM5905
0644 30 03584140          CALL    CODE      OUTPUT OP                          BCOM5910
0646 0  70EC              B       SC2A0     LOOP FOR NEXT OP                   BCOM5915
0647 0  0007        FNOP  DC      7                                            BCOM5920
0648 0  C0FE        SC2A5 LD      FNOP      OUTPUT FUNCTION CODE               BCOM5925
0649 30 03584140          CALL    CODE                                         BCOM5930
064B 30 17597000          CALL    POP       POP FUNCTION STACK                 BCOM5935
064D 1  06EB              DC      FNS                                          BCOM5940
064E 0  709C              B       SERR7                                        BCOM5945
064F 01 D40005AE          STO  L  T         SAVE NO. OF PARAMS                 BCOM5950
0651 30 17597000          CALL    POP                                          BCOM5955
0653 1  06EB              DC      FNS                                          BCOM5960
0654 0  7096              B       SERR7                                        BCOM5965
0655 30 03584140          CALL    CODE      OUTPUT FCN NAME                    BCOM5970
                    * NEED TO CHECK NO. OF PARAMS AGAINST SYMBOL TABLE         BCOM5975
0657 01 C40005AE          LD   L  T                                            BCOM5980
0659 30 03584141          CALL    CODEA     OUTPUT NO. OF PARAMS               BCOM5985
065B 0  709A              B       SC215     CONTINUE SCAN                      BCOM5990
                    * COMMA                                                    BCOM5995
065C 30 17597000    SC2C0 CALL    POP       POP FUNCTION STACK                 BCOM6000
065E 1  06EB              DC      FNS                                          BCOM6005
065F 0  7014              B       SC500     DONE IF STACK EMPTY                BCOM6010
0660 01 84000095          A    L  K1                                           BCOM6015
0662 30 17922200          CALL    PUSH      INCR. NO. OF PARS                  BCOM6020
0664 1  06EB              DC      FNS                                          BCOM6025
0665 0  7005              B       SERR8     IMPOSSIBLE ERROR                   BCOM6030
0666 0  C003              LD      COM                                          BCOM6035
0667 0  4021              BSI     MVOP                                         BCOM6040
0668 01 4C000563          B    L  SCN1                                         BCOM6045
066A 0  0006        COM   DC      6                                            BCOM6050
066B 0  6121        SERR8 LDX   1 33                                           BCOM6055
066C 01 4C0005EE          B    L  SERR                                         BCOM6060
066E 0  6122        SERR9 LDX   1 34                                           BCOM6065
066F 01 4C0005EE          B    L  SERR                                         BCOM6070
0671 0  6123        SERRA LDX   1 35                                           BCOM6075
0672 01 4C0005EE          B    L  SERR                                         BCOM6080
                    * END OF EXPRESSION                                        BCOM6085
0674 0  C013        SC500 LD      EOSC                                         BCOM6090
0675 0  4013              BSI     MVOP                                         BCOM6095
0676 30 17597000          CALL    POP                                          BCOM6100
0678 1  06B8              DC      OPS                                          BCOM6105
0679 0  7001              B       *+1                                          BCOM6110
067A 0  70F6              B       SERRA                                        BCOM6115
067B 30 17597000          CALL    POP                                          BCOM6120
067D 1  06EB              DC      FNS                                          BCOM6125
067E 0  7001              B       *+1                                          BCOM6130
067F 0  70EE              B       SERR9                                        BCOM6135
0680 01 74010555          MDM  L  BSCAN,1                                      BCOM6140
0682 00 65000000    XR1   LDX  L1 *-*       RESTORE XR1                        BCOM6145
0684 00 66000000    XR2   LDX  L2 *-*       RESTORE XR2                        BCOM6150
0686 01 4C800555          B    I  BSCAN                                        BCOM6155
0688 0  0009        EOSC  DC      9                                            BCOM6160
                    *                                                          BCOM6165
                    *                                                          BCOM6170
0689 0  0000        MVOP  DC      *-*                                          BCOM6175
068A 0  691C              STX   1 MXR1+1                                       BCOM6180
068B 0  6A1D              STX   2 MXR2+1                                       BCOM6185
068C 0  D01F              STO     OPA       SAVE OP                            BCOM6190
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068D 01 658006AC          LDX   I1 OPA       OP CODE TO XR1                BCOM6195
068F 30 17597000    MV10  CALL     POP       POP OP STACK                  BCOM6200
0691 1  06B8              DC       OPS                                     BCOM6205
0692 0  7012              B        MV20                                    BCOM6210
0693 0  D019              STO      OPB                                     BCOM6215
0694 01 668006AD          LDX   I2 OPB                                     BCOM6220
0696 01 C50006AE          LD    L1 PT                                      BCOM6225
0698 01 960006AE          S     L2 PT                                      BCOM6230
069A 01 4C3006A0          BP       MV15                                    BCOM6235
069C 0  C010              LD       OPB                                     BCOM6240
069D 30 03584140          CALL     CODE                                    BCOM6245
069F 0  70EF              B        MV10                                    BCOM6250
06A0 0  C00C        MV15  LD       OPB                                     BCOM6255
06A1 30 17922200          CALL     PUSH                                    BCOM6260
06A3 1  06B8              DC       OPS                                     BCOM6265
06A4 0  70C6              B        SERR8     IMPOSSIBLE ERROR              BCOM6270
06A5 0  C006        MV20  LD       OPA                                     BCOM6275
06A6 00 65000000    MXR1  LDX   L1 *-*                                     BCOM6280
06A8 00 66000000    MXR2  LDX   L2 *-*                                     BCOM6285
06AA 01 4C800689          B     I  MVOP                                    BCOM6290
06AC 0  0000        OPA   DC       0                                       BCOM6295
06AD 0  0000        OPB   DC       0                                       BCOM6300
                    * PRECEDENCE TABLE                                     BCOM6305
06AE 0  0004        PT    DC       4         +                             BCOM6310
06AF 0  0004              DC       4         -                             BCOM6315
06B0 0  0005              DC       5         /                             BCOM6320
06B1 0  0005              DC       5         *                             BCOM6325
06B2 0  000A              DC       10        **                            BCOM6330
06B3 0  0008              DC       8         UNARY -                       BCOM6335
06B4 0  0002              DC       2         .                             BCOM6340
06B5 0  0000              DC       0         LEFT PAREN                    BCOM6345
06B6 0  0000              DC       0         FUNCTION LEFT PAREN           BCOM6350
06B7 0  0001              DC       1         EOS                           BCOM6355
06B8 0  3200        OPS   DC       /3200                                   BCOM6360
06B9    0032              BSS      50                                      BCOM6365
06EB 0  3200        FNS   DC       /3200                                   BCOM6370
06EC    0032              BSS      50                                      BCOM6375
071E                      END      BST                                     BCOM6380

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   285 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                     BCOM6385

*DELETE              BCOMP                                                BCOM6390
CART ID 0001   DB ADDR  3696   DB CNT   0062

*STORE       WS  UA  BCOMP                                                BCOM6395
CART ID 0001   DB ADDR  39CB   DB CNT   0062

// EJECT
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```
// ASM                                                                  BINT0005
*LIST                                                                   BINT0010
*SYSTEM SYMBOL TABLE                                                    BINT0015
0000     022558D9          ENT      BINTR                               BINT0020
0000 0   0000        BINTR DC       *-*                                 BINT0025
                     *                                                  BINT0030
                     *     INITIALIZATION                               BINT0035
                     *                                                  BINT0040
0095                 FPAD  EQU      /95                                 BINT0045
0001 00 C4000095           LD    L  FPAD                                BINT0050
0003 01 D40000D5           STO   L  SECTR                               BINT0055
0005 0   1810              SRA      16                                  BINT0060
0006 00 D40001FE           STO   L  LNUM      INITIALIZE LINE NUMBER    BINT0065
0008 00 D40001FF           STO   L  LNINC     AND INCREMENT             BINT0070
000A 30 034C5059           CALL     CLEAR     CLEAR FUNCTION STACK      BINT0075
000C 1   0350              DC       FSTK                                BINT0080
000D 30 034C5059           CALL     CLEAR     CLEAR ADDRESS STACK       BINT0085
000F 1   031D              DC       ASTK                                BINT0090
0010 01 C40000C4           LD    L  EOS       INIT C TO EOS TO FORCE    BINT0095
0012 00 D4000201           STO   L  C         INITIAL READ              BINT0100
0014 01 440001F0           BSI   L  PBL       BLANK OUT PRINT BUFFER    BINT0105
0016 00 65800209           LDX   I1 UAD       USER AREA ADDR TO XR1     BINT0110
0018 0   C101              LD     1 ST        START OF STMNTS (RELATIVE) BINT0115
0019 00 84000209           A     L  UAD       COMPUTE ABSOLUTE ADDRESS  BINT0120
001B 0   D001              STO      *+1       AND                       BINT0125
001C 00 65000000           LDX   L1 *-*       PUT IT INTO XR1           BINT0130
                     *                                                  BINT0135
                     *     BASIC INTERPRETER LOOP                       BINT0140
                     *                                                  BINT0145
001E 0   C101        ILP   LD     1 1         ISOLATE SATEMENT TYPE CODE BINT0150
001F 0   1808              SRA      8                                   BINT0155
0020 0   D001              STO      *+1                                 BINT0160
0021 00 66000000           LDX   L2 *-*       AND PUT IT IN XR2         BINT0165
0023 00 6D000206           STX   L1 SREC      SAVE POINTER TO STMNT REC BINT0170
0025 0   691B              STX    1 BRET+1    SAVE POINTER FOR LTR RESTR BINT0175
0026 00 74020206           MDM   L  SREC,2    POINT TO STMNT NO.        BINT0180
0028 00 C4800206           LD    I  SREC      GET STMNT NO.             BINT0185
002A 01 4C080032           BNP      NOSN      NO LINE NO.               BINT0190
002C 00 D40001FE           STO   L  LNUM      STORE LINE NO.            BINT0195
002E 0   1810              SRA      16        ZERO THE INCREMENT        BINT0200
002F 00 D40001FF           STO   L  LNINC                               BINT0205
0031 0   7005              B        SN                                  BINT0210
0032 0   1810        NOSN  SRA      16                                  BINT0215
0033 00 94800206           S     I  SREC      CONVERT TO POSITIVE NO.   BINT0220
0035 00 D40001FF           STO   L  LNINC     AND STORE AS INCREMENT    BINT0225
0037 00 74010206     SN    MDM   L  SREC,1    POINT TO BEGINNING OF CODE BINT0230
0039 0   1810              SRA      16        CLEAR LEFT-RIGHT IND      BINT0235
003A 00 D4000208           STO   L  LFRT      TO LEFT                   BINT0240
003C 01 440005CD           BSI   L  GETI      GET FIRST BYTE OF CODE    BINT0245
003E 01 4E800049           B     I2 ITAB      BR TO HANDLE INSTRUCTION  BINT0250
                     *                                                  BINT0255
                     *     RETURN HERE AFTER HANDLING STATEMENT         BINT0260
                     *                                                  BINT0265
0040 00 65000000     BRET  LDX   L1 *-*       POINT TO STMNT RECORD     BINT0270
0042 0   C101              LD     1 1         ISOLATE LENGTH            BINT0275
0043 0   1008              SLA      8         OF RECORD (IN WORDS)      BINT0280
0044 0   1808              SRA      8         AND ADD TO XR1            BINT0285
0045 0   D001              STO      *+1                                 BINT0290
0046 00 75000000           MDX   L1 *-*                                 BINT0295
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0048 0   70D5                B        ILP       GO WORK ON NEXT STMNT        BINT0300
                     *                                                       BINT0305
                     *       STATEMENT TABLE                                 BINT0310
                     *                                                       BINT0315
0049 1   0282        ITAB    DC       ILET      LET                          BINT0320
004A 1   0178                DC       IPRNT     PRINT                        BINT0325
004B 1   0070                DC       IREAD     READ                         BINT0330
004C 1   0061                DC       IGOTO     GOTO                         BINT0335
004D 1   053D                DC       IIF       IF                           BINT0340
004E 1   056C                DC       IFOR      FOR                          BINT0345
004F 1   05A3                DC       INEXT     NEXT                         BINT0350
0050 1   0040                DC       IREM      REMARK                       BINT0355
0051 1   0520                DC       IGSUB     GOSUB                        BINT0360
0052 1   052D                DC       IRTN      RETURN                       BINT0365
0053 1   0040                DC       IDIM      DIM                          BINT0370
0054 1   0040                DC       IDEF      DEF                          BINT0375
0055 1   0280                DC       ISTOP     STOP                         BINT0380
0056 1   0280                DC       IEND      END                          BINT0385
0057 1   0040                DC       ION       ON                           BINT0390
0058 1   0040                DC       IVOID     VOID STATEMENT               BINT0395
0059 1   0040                DC       IDBUG     DEBUG                        BINT0400
005A 1   0566                DC       IKEYB     TYPE                         BINT0405
005B 1   005C                DC       IPAGE     PAGE                         BINT0410
005C 0   C0FF        IPAGE   LD       *-1                                    BINT0415
005D 00  D4000205            STO   L  PGOF      SET PG OVERFLOW ON           BINT0420
005F 01  4C000040            B     L  BRET                                   BINT0425
                     *                                                       BINT0430
                     *       INTERPRET 'GOTO' STATEMENT                      BINT0435
                     *                                                       BINT0440
0061 01  C40005E3    IGOTO   LD    L  INTC      GET ID OF STMNT NO.          BINT0445
0063 30  14057000            CALL     MAP       COMPUTE ADDR OF ELMNT REC    BINT0450
0065 0   D001                STO      *+1                                    BINT0455
0066 00  66000000            LDX   L2 *-*       AND PUT IT INTO XR2          BINT0460
0068 0   C203                LD     2 3         GET REL ADDR OF STMNT REC    BINT0465
0069 00  84000209            A     L  UAD       COMPUTE ABSOLUTE ADDR        BINT0470
006B 0   D001                STO      *+1                                    BINT0475
006C 00  65000000            LDX   L1 *-*       AND PUT IT INTO XR1          BINT0480
006E 01  4C00001E            B     L  ILP       BR TO BEGIN OF INTERP LOOP   BINT0485
                     *                                                       BINT0490
                     *       INTERPRET 'READ' STATEMENT                      BINT0495
                     *                                                       BINT0500
0070 00  C4000201    IREAD   LD    L  C         ARE WE AT END OF CARD        BINT0505
0072 01  940000C4            S     L  EOS                                    BINT0510
0074 01  4C2000A6            BNZ      IRLP      NO, SO GO HANDLE READ        BINT0515
0076 00  C400020A    NWCD    LD    L  LSW       SHOULD READ FROM DISK        BINT0520
0078 01  4C28007E            BN       *+4       BRANCH IF YES                BINT0525
007A 30  02255000            CALL     BIN       READ A CARD                  BINT0530
007C 0   7016                B        MRCD      MON CTL RECORD FOUND         BINT0535
007D 0   7009                B        CIN                                    BINT0540
007E 0   C853                LDD      IOLST     READ FROM DISK               BINT0545
00F2                 DZ000   EQU      /F2                                    BINT0550
007F 00  440000F2            BSI   L  DZ000                                  BINT0555
00EE                 DBSY    EQU      /EE                                    BINT0560
0081 00  740000EE            MDM   L  DBSY                                   BINT0565
0083 0   70FD                B        *-3                                    BINT0570
0084 01  740100D5            MDM   L  SECTR,1                                BINT0575
0086 0   C04A                LD       DBAD                                   BINT0580
0087 0   D048        CIN     STO      LPS                                    BINT0585
0088 01  658000D0            LDX   I1 LPS                                    BINT0590
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008A 01 66000127          LDX  L2 RBF                                  BINT0595
008C 00 6E000200          STX  L2 LP                                   BINT0600
008E 0  C100              LD    1 0        GET 1ST CHAR FROM CARD      BINT0605
008F 0  903F              S       SL       IS IT /                     BINT0610
0090 01 4C20009A          BNZ     RBLP     NO, GO REMOVE BLANKS        BINT0615
0092 0  7002              B       *+2                                  BINT0620
0093 00 D4000200    MRCD  STO  L  LP       SAVE POINTER                BINT0625
0095 0  6137              LDX   1 55       OUT OF DATA                 BINT0630
0096 30 02159640          CALL    BERR                                 BINT0635
0098 01 4C800000          B    I  BINTR                                BINT0640
009A 0  C100        RBLP  LD    1 0        GET CHAR FROM CARD          BINT0645
009B 0  D200              STO   2 0        PUT BACK                    BINT0650
009C 0  9030              S       BL       WAS IT BLANK                BINT0655
009D 0  4820              SKP     Z        SKIP IF BLANK               BINT0660
009E 0  7201              MDX   2 1        INCR IF NOT BLANK           BINT0665
009F 0  C100              LD    1 0        GET THE CHAR AGAIN          BINT0670
00A0 01 940000C4          S    L  EOS      WAS IT EOS                  BINT0675
00A2 01 4C1800A6          BZ      IRLP     YES, SO HANDLE READ         BINT0680
00A4 0  7101              MDX   1 1        INCREMENT                   BINT0685
00A5 0  70F4              B       RBLP     AND KEEP REMOVING BLANKS    BINT0690
00A6 30 071630C0    IRLP  CALL    GETC     GET CHAR FROM CARD          BINT0695
00A8 00 C4000201          LD   L  C                                    BINT0700
00AA 01 940000C4          S    L  EOS                                  BINT0705
00AC 01 4C180076          BZ      NWCD                                 BINT0710
00AE 01 44000286          BSI  L  ISCAN    GET NEXT LIST ITEM          BINT0715
00B0 30 17597000          CALL    POP                                  BINT0720
00B2 1  031D              DC      ASTK     POP THE ADDRESS STACK       BINT0725
00B3 0  708C              B       BRET     STACK EMPTY, SO RETURN      BINT0730
00B4 01 4C080518          BNP     STERR                                BINT0735
00B6 0  D004              STO     RSTO     SAVE ADDRESS                BINT0740
00B7 30 070D6540          CALL    GCON     GET NO. FROM CARD           BINT0745
00B9 0  700B              B       IRER     ERROR IN NO.                BINT0750
00BA 20 058A3580          LIBF    ESTO     STORE NO.                   BINT0755
00BB 0  0000        RSTO  DC      *-*                                  BINT0760
00BC 01 C40005E3          LD   L  INTC     GET BYTE OF CODE            BINT0765
00BE 0  900F              S       IK6      CHECK FOR COMMA             BINT0770
00BF 01 4C200040          BNZ     BRET     NOT COMMA, SO QUIT          BINT0775
00C1 01 440005CD          BSI  L  GETI     GET NEXT BYTE OF CODE       BINT0780
00C3 0  70AC              B       IREAD    READ NEXT ITEM              BINT0785
00C4 0  003F        EOS   DC      /3F                                  BINT0790
00C5 0  6129        IRER  LDX   1 41       ERROR IN NUMBER ON DATA CD  BINT0795
00C6 30 02159640          CALL    BERR                                 BINT0800
00C8 0  C007              LD      LPS      ADDR OF ERROR CARD          BINT0805
00C9 30 025448C0          CALL    BOUT     PRINT ERROR CARD            BINT0810
00CB 01 4C800000          B    I  BINTR    STOP INTERPRETING           BINT0815
00CD 0  0030        BL    DC      /30      BLANK                       BINT0820
00CE 0  0006        IK6   DC      6        CODE FOR I/O LIST COMMA     BINT0825
00CF 0  0026        SL    DC      /26      SLASH                       BINT0830
00D0 0  0000        LPS   DC      0                                    BINT0835
00D1 1  00D6        DBAD  DC      IOAR+2                               BINT0840
00D2    0000              BSS  E  0                                    BINT0845
00D2 0  0000        IOLST DC      0                                    BINT0850
00D3 1  00D4              DC      IOAR                                 BINT0855
00D4 0  0051        IOAR  DC      81                                   BINT0860
00D5 0  0000        SECTR DC      0                                    BINT0865
00D6    0051              BSS     81                                   BINT0870
0127    0051        RBF   BSS     81       BUF TO HOLD DATA CARD       BINT0875
                    *                                                  BINT0880
                    *     INTERPRET 'PRINT' STATEMENT                  BINT0885
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                        *                                                                BINT0890
0178 01 C40005E3        IPRNT LD    L   INTC      GET BYTE OF CODE                       BINT0895
017A 01 F40000C4              EOR   L   EOS       IS IT EOS                              BINT0900
017C 01 4C1801C4              BZ        PND       YES, PRINT LINE                        BINT0905
017E 01 C40005E3        PLP   LD    L   INTC      GET BYTE OF CODE                       BINT0910
0180 0  907D                  S         HCOD      IT IT LITERAL CODE                     BINT0915
0181 01 4C1801CE              BZ        HLIT      YES, HANDLE LITERAL                    BINT0920
0183 0  C07B                  LD        LINEL     GET LENGTH OF LINE                     BINT0925
0184 0  907C                  S         LZB       ARE WE INTO LAST ZONE                  BINT0930
0185 01 4C3001BB              BP        NXTL      YES, SO PRINT LINE                     BINT0935
0187 01 44000286              BSI   L   ISCAN     EVALUATE PRINT ITEM                    BINT0940
0189 01 440002D2              BSI   L   GETCP     PUT VALUE INTO FAC                     BINT0945
018B 30 030D6540              CALL      CCON      CONVERT TO DECIMAL                     BINT0950
018D 0  0000            PLOC  DC        *-*                                              BINT0955
018E 0  D071                  STO       LCON      STORE NO. OF CHARS                     BINT0960
018F 0  80FD                  A         PLOC      UPDATE LINE POSITION                   BINT0965
0190 0  D0FC                  STO       PLOC                                             BINT0970
0191 0  C06D                  LD        LINEL                                            BINT0975
0192 0  806D                  A         LCON      UPDATE LENGTH OF LINE                  BINT0980
0193 0  D06B                  STO       LINEL                                            BINT0985
0194 01 C40005E3        PNXT  LD    L   INTC      GET BYTE OF CODE                       BINT0990
0196 01 F40000C4              EOR   L   EOS       IS IT EOS                              BINT0995
0198 01 4C1801C4              BZ        PND       YES, SO PRINT LINE AND QUIT            BINT1000
019A 01 C40005E3              LD    L   INTC                                             BINT1005
019C 0  9065                  S         PRC       IS IT COMMA                            BINT1010
019D 01 4C2001B0              BNZ       TRYSC     TRY SEMI-COLON                         BINT1015
019F 0  1810                  SRA       16        COMMA, MOVE TO NEXT ZONE               BINT1020
01A0 0  905E                  S         LINEL                                            BINT1025
01A1 0  8062                  A         IK15                                             BINT1030
01A2 01 4C2801A1              BN        *-3                                              BINT1035
01A4 0  805A                  A         LINEL                                            BINT1040
01A5 0  D059                  STO       LINEL                                            BINT1045
01A6 0  805F                  A         PRAD      UPDATE POSITION IN LINE                BINT1050
01A7 0  D0E5                  STO       PLOC                                             BINT1055
01A8 01 440005CD        PNX5  BSI   L   GETI      GET NEXT BYTE OF CODE                  BINT1060
01AA 01 F40000C4              EOR   L   EOS       IS IT EOS                              BINT1065
01AC 01 4C20017E              BNZ       PLP       NO, SO MUST BE PRINT ITEM              BINT1070
01AE 01 4C000040              B     L   BRET      YES, SO QUIT WITHOUT PRINT             BINT1075
01B0 01 C40005E3        TRYSC LD    L   INTC      GET BYTE OF CODE                       BINT1080
01B2 0  9007                  S         SCLN      IS IT SEMI-COLON CODE                  BINT1085
01B3 01 4C20017E              BNZ       PLP       NO, MUST BE PRINT ITEM                 BINT1090
01B5 01 7401018D              MDM   L   PLOC,1    SPACE 1 BECAUSE SEMI-COLON             BINT1095
01B7 01 740101FF              MDM   L   LINEL,1                                          BINT1100
01B9 0  70EE                  B         PNX5                                             BINT1105
01BA 0  0012            SCLN  DC        18        CODE FOR SEMI-COLON                    BINT1110
                        *                                                                BINT1115
01BB 01 C40000C4        NXTL  LD    L   EOS       PUT EOS AT END OF LINE                 BINT1120
01BD 01 D480018D              STO   I   PLOC                                             BINT1125
01BF 0  C046                  LD        PRAD      GET ADDR OF LINE                       BINT1130
01C0 30 025A48C0              CALL      BOUT      CALL PRINT ROUTINE                     BINT1135
01C2 0  402D                  BSI       PBL       BLANK LINE AND RESET PTRS              BINT1140
01C3 0  70BA                  B         PLP       CONTINUE                               BINT1145
                        *                                                                BINT1150
01C4 01 C40000C4        PND   LD    L   EOS       PUT EOS AT END OF LINE                 BINT1155
01C6 01 D480018D              STO   I   PLOC                                             BINT1160
01C8 0  C03D                  LD        PRAD                                             BINT1165
01C9 30 025A48C0              CALL      BOUT      CALL PRINT ROUTINE                     BINT1170
01CB 0  4024                  BSI       PBL       BLANK LINE AND RESET PTRS              BINT1175
01CC 01 4C000040              B     L   BRET      RETURN TO INTERPRETER                  BINT1180
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                        *                                                    BINT1185
01CE 01 440005CD        HLIT  BSI   L  GETI      GET LENGTH OF LITERAL       BINT1190
01D0 0  D02F                  STO      CCT       SAVE IT                     BINT1195
01D1 0  802D                  A        LINEL     ADD CURRENT LINE LENGTH     BINT1200
01D2 0  9030                  S        TLEN      IS IT TOO LONG              BINT1205
01D3 01 4C0801DD              BNP      HLITS     BRANCH IF NOT               BINT1210
01D5 01 C40000C4              LD    L  EOS       TOO LONG - PRINT CURRENT    BINT1215
01D7 01 D480018D              STO   I  PLOC      LINE AND START NEW ONE      BINT1220
01D9 0  C02C                  LD       PRAD                                  BINT1225
01DA 30 025A48C0              CALL     BOUT                                  BINT1230
01DC 0  4013                  BSI      PBL       BLANK LINE AND RESET PTRS   BINT1235
01DD 01 66800200        HLITS LDX   I2 CCT       GET CHAR COUNT              BINT1240
01DF 01 440005CD        HLP   BSI   L  GETI      GET A CHAR                  BINT1245
01E1 01 D480018D              STO   I  PLOC      STORE INTO LINE             BINT1250
01E3 01 7401018D              MDM   L  PLOC,1    UPDATE LINE POINTER         BINT1255
01E5 0  72FF                  MDX    2 -1                                    BINT1260
01E6 0  70F8                  B        HLP       LOOP TIL DONE               BINT1265
01E7 0  C017                  LD       LINEL     GET LENGTH OF LINE          BINT1270
01E8 0  8017                  A        CCT       UPDATE LENGTH               BINT1275
01E9 0  D015                  STO      LINEL                                 BINT1280
01EA 01 440005CD              BSI   L  GETI      GET NEXT BYTE OF CODF       BINT1285
01EC 0  90CD                  S        SCLN      IS IT SEMI-COLON            BINT1290
01ED 01 4C1801A8              BZ       PNX5      YES                         BINT1295
01EF 0  70A4                  B        PNXT      CONTINUE                    BINT1300
                        *                                                    BINT1305
01F0 0  0000            PBL   DC       *-*       BLANK OUT LINE              BINT1310
01F1 0  C013                  LD       IBL       LOAD BLANK                  BINT1315
01F2 01 66800203              LDX   I2 TLEN      GET LENGTH OF LINE          BINT1320
01F4 01 D6000206              STO   L2 PRA-1                                 BINT1325
01F6 0  72FF                  MDX    2 -1                                    BINT1330
01F7 0  70FC                  B        *-4                                   BINT1335
01F8 0  C00D                  LD       PRAD      RESET LINE POINTER          BINT1340
01F9 0  D093                  STO      PLOC                                  BINT1345
01FA 0  1810                  SRA      16        RESET LINE LENGTH TO ZERO   BINT1350
01FB 0  D003                  STO      LINEL                                 BINT1355
01FC 01 4C8001F0              B     I  PBL       RETURN                      BINT1360
                        *                                                    BINT1365
01FE 0  0011            HCOD  DC       17        HOLLERITH LITERAL CODE      BINT1370
01FF 0  0000            LINEL DC       0         LINE LENGTH                 BINT1375
0200 0  0000            CCT   DC       0         ITEM LENGTH                 BINT1380
0200                    LCON  EQU      CCT                                   BINT1385
0201 0  006A            LZB   DC       106       LAST ZONE BEGIN             BINT1390
0202 0  0006            PRC   DC       6         I/O COMMA                   BINT1395
0203 0  0078            TLEN  DC       120       TOTAL LINE LENGTH           BINT1400
0204 0  000F            IK15  DC       15        CONSTANT LENGTH OF ZONE     BINT1405
0205 0  0030            IBL   DC       /30       BLANK                       BINT1410
0206 1  0207            PRAD  DC       PRA       ADDR OF PRINT LINE          BINT1415
0207    0079            PRA   BSS      121       PRINT LINE BUFFER           BINT1420
                        *                                                    BINT1425
                        *     INTERPRET 'END' STATEMENT                      BINT1430
                        *                                                    BINT1435
0280 01 4C800000        IEND  B     I  BINTR     RETURN TO CONTROL PROGRAM   BINT1440
                        *                                                    BINT1445
                        *     VARIOUS STATEMENT EQUIVALENCES                 BINT1450
                        *                                                    BINT1455
0040                    IREM  EQU      BRET                                  BINT1460
0040                    IDIM  EQU      IREM                                  BINT1465
0040                    IDEF  EQU      IREM                                  BINT1470
0280                    ISTOP EQU      IEND                                  BINT1475
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0040                  ION    EQU      IREM                                    BINT1480
0040                  IVCID  EQU      IREM                                    BINT1485
0040                  IDBUG  EQU      IREM                                    BINT1490
                      *                                                       BINT1495
                      *      INTERPRET 'LET' STATEMENT                        BINT1500
                      *                                                       BINT1505
0282 01 44000286      ILET   BSI   L  ISCAN                                   BINT1510
0284 01 4C000040             B     L  BRET                                    BINT1515
                      *                                                       BINT1520
                      *      ISCAN - INTERPRETER GENERAL SCAN ROUTINE         BINT1525
                      *      INTERPRETS OBJECT CODE UNTIL REACHING            BINT1530
                      *      EITHER I/O COMMA OR EOS                          BINT1535
                      *                                                       BINT1540
0286 0  0000          ISCAN  DC       *-*                                     BINT1545
0287 01 C40005E3      ISCLP  LD    L  INTC                                    BINT1550
0289 0  9020                 S        I10                                     BINT1555
028A 01 4C080291             BNP      IOP                                     BINT1560
028C 0  901E                 S        I53                                     BINT1565
028D 01 4C30029A             BP       IOPND                                   BINT1570
028F 01 4C800286             B     I  ISCAN                                   BINT1575
0291 0  8018          IOP    A        I10                                     BINT1580
0292 0  D001                 STO      *+1                                     BINT1585
0293 00 65000000             LDX   L1 *-*                                     BINT1590
0295 01 4D8002AF             B     I1 IOPT       BR TO HANDLE OPERATION       BINT1595
                      *      RETURN HERE AFTER OPERATION COMPLETE             BINT1600
0297 01 440005CD      IOP5   BSI   L  GETI       GET NEXT BYTE OF CODE        BINT1605
0299 0  70ED                 B        ISCLP                                   BINT1610
029A 0  8011          IOPND  A        I63                                     BINT1615
029B 30 14057000             CALL     MAP        COMPUTE ADDR OF ELMNT REC    BINT1620
029D 0  800F                 A        I2                                      BINT1625
                      * CHECK FOR CONSTANT AND FLAG IT BY SETTING             BINT1630
                      * SIGN BIT OF ADDRESS ON                                BINT1635
029E 0  D00F                 STO      ITMP       SAVE ADDRESS                 BINT1640
029F 01 658002AE             LDX   I1 ITMP       ADDR TO XR1                  BINT1645
02A1 0  C1FF                 LD     1 -1         LOAD FLAG WORD               BINT1650
02A2 0  E00A                 AND      I2         CHECK FOR CONSTANT FLAG      BINT1655
02A3 0  100E                 SLA      14         PUT INTO SIGN BIT            BINT1660
02A4 0  E809                 OR       ITMP       COMBINE WITH ADDRESS         BINT1665
02A5 30 17922200             CALL     PUSH                                    BINT1670
02A7 1  031D                 DC       ASTK                                    BINT1675
02A8 0  7011                 B        FLSTK                                   BINT1680
02A9 0  70ED                 B        IOP5                                    BINT1685
02AA 0  000A          I10    DC       10                                      BINT1690
02AB 0  0035          I53    DC       53                                      BINT1695
02AC 0  003F          I63    DC       63                                      BINT1700
02AD 0  0002          I2     DC       2                                       BINT1705
02AE 0  0000          ITMP   DC       0          TEMPORARY LOC                BINT1710
                      *                                                       BINT1715
                      *      OPERATION TABLE                                  BINT1720
                      *                                                       BINT1725
02AF 1  02BF          IOPT   DC       IBOP       +                            BINT1730
02B0 1  02BF                 DC       IBOP       -                            BINT1735
02B1 1  02BF                 DC       IBOP       /                            BINT1740
02B2 1  02BF                 DC       IBOP       *                            BINT1745
02B3 1  02F6                 DC       IPOW       **                           BINT1750
02B4 1  0316                 DC       IUM        UNARY MINUS                  BINT1755
02B5 1  031B                 DC       IDM        I/O COMMA                    BINT1760
02B6 1  039D                 DC       IFN        FUNCTION OR ARRAY            BINT1765
02B7 1  050C                 DC       ISTOL      STORE AND LEAVE ON STACK     BINT1770
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02B8 1  04FF                DC      ISTOR     REVERSE STORE = 9          BINT1775
02B9 1  04ED                DC      ISTO      STORE                      BINT1780
                     *                                                   BINT1785
02BA 0  612A         FLSTK  LDX   1 42        ADDR STACK ERROR IN ISCAN  BINT1790
02BB 30 02159640            CALL    BERR                                 BINT1795
02BD 01 4C800000            B     I BINTR     STOP INTERPRETING          BINT1800
                     *      HANDLE BINARY OPERATOR +,-,/,*               BINT1805
02BF 01 C50002CP     IBOP   LD    L1 OPS                                 BINT1810
02C1 0  D004                STO     OP                                   BINT1815
02C2 0  400F                BSI     GETOP                                BINT1820
02C3 20 058A35E0            LIBF    ESTO                                 BINT1825
02C4 1  02CF                DC      BOP                                  BINT1830
02C5 0  400C                BSI     GETOP                                BINT1835
02C6    0001         OP     BSS     1          GETS SET TO LIBF          BINT1840
02C7 1  02CF                DC      BOP                                  BINT1845
02C8 0  401E                BSI     RSLT                                 BINT1850
02C9 01 4C000297            B     L IOPS                                 BINT1855
02CB 20 05044100     OPS    LIBF    EADD                                 BINT1860
02CC 20 058A4080            LIBF    ESUB                                 BINT1865
02CD 20 05109940            LIBF    EDIV                                 BINT1870
02CE 20 05517A00            LIBF    EMPY                                 BINT1875
02CF    0003         BOP    BSS     3                                    BINT1880
                     *                                                   BINT1885
                     *      ROUTINE TO GET ITEM FROM STACK AND PUT IN FAC BINT1890
                     *                                                   BINT1895
02D2 0  0000         GETOP  DC      *-*                                  BINT1900
02D3 30 17597000            CALL    POP                                  BINT1905
02D5 1  031D                DC      ASTK                                 BINT1910
02D6 0  70E3                B       FLSTK                                BINT1915
02D7 01 4C3002E2            BP      GOK                                  BINT1920
02D9 01 4C1802DF            BZ      *+3                                  BINT1925
02DB 0  1001                SLA     1          CLEAR SIGN BIT FROM CONST BINT1930
02DC 0  1801                SRA     1                                    BINT1935
02DD 0  7004                B       GOK                                  BINT1940
02DE 01 C4000360            LD    L VSTK                                 BINT1945
02E0 01 74FD0360            MDM   L VSTK,-3                              BINT1950
02E2 0  D001         GOK    STO     *+1                                  BINT1955
02E3 20 054C4000            LIBF    ELD                                  BINT1960
02E4 0  0000                DC      *-*                                  BINT1965
02E5 01 4C8002D2            B     I GETOP                                BINT1970
                     *                                                   BINT1975
                     *      RTN TO TAKE RESULT FROM FAC AND PUT ON STACK BINT1980
                     *                                                   BINT1985
02E7 0  0000         RSLT   DC      *-*                                  BINT1990
02E8 01 74030360            MDM   L VSTK,3                               BINT1995
02EA 01 C4000360            LD    L VSTK                                 BINT2000
02EC 0  D001                STO     *+1                                  BINT2005
02ED 20 058A3580            LIBF    ESTO                                 BINT2010
02EE 0  0000                DC      *-*                                  BINT2015
02EF 0  1810                SRA     16                                   BINT2020
02F0 30 17922200            CALL    PUSH                                 BINT2025
02F2 1  031D                DC      ASTK                                 BINT2030
02F3 0  70C6                B       FLSTK                                BINT2035
02F4 01 4C8002E7            B     I RSLT                                 BINT2040
                     *      HANDLE EXPONENTIATION (**)                   BINT2045
02F6 01 44000202     IPOW   BSI   L GETOP                                BINT2050
02F8 20 058A3580            LIBF    ESTO                                 BINT2055
02F9 1  02CF                DC      BOP                                  BINT2060
02FA 20 091899C0            LIBF    IFIX       CHECK FOR INTEGER EXPON   BINT2065
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02FB 20 064D6063          LIBF    FLOAT                                  BINT2070
02FC 20 058A4080          LIBF    ESUB                                   BINT2075
02FD 1  02CF              DC      BOP                                    BINT2080
02FE 0  C37E              LD    3 126                                    BINT2085
02FF 01 4C18030A          BZ      INPW      BRANCH IF INTEGER EXP        BINT2090
0301 01 440002D2          BSI   L GETOP                                  BINT2095
0303 30 05067080          CALL    EAXB                                   BINT2100
0305 1  02CF              DC      BOP                                    BINT2105
0306 01 440002E7          BSI   L RSLT                                   BINT2110
0308 01 4C000297          B     L IOPS                                   BINT2115
030A 20 054C4000    INPW  LIBF    ELD                                    BINT2120
030B 1  02CF              DC      BOP                                    BINT2125
030C 20 091899C0          LIBF    IFIX      CONVERT EXPONENT             BINT2130
030D 0  D0C1              STO     BOP       TO INTEGER FORM              BINT2135
030E 01 440002D2          BSI   L GETOP     GET BASE                     BINT2140
0310 20 05067240          LIBF    EAXI      EXPONENTIATE                 BINT2145
0311 1  02CF              DC      BOP                                    BINT2150
0312 01 440002E7          BSI   L RSLT      STORE RESULT ON STACK        BINT2155
0314 01 4C000297          B     L IOPS      RETURN                       BINT2160
                    *     HANDLE UNARY MINUS                             BINT2165
0316 0  40BB        IUM   BSI     GETOP                                  BINT2170
0317 20 22559000          LIBF    SNR                                    BINT2175
0318 0  40CE              BSI     RSLT                                   BINT2180
0319 01 4C000297          B     L IOPS                                   BINT2185
031B 01 4C800286    IDM   B     I ISCAN                                  BINT2190
                    *     STACKS USED IN INTERPRETATION                  BINT2195
031D 0  3200        ASTK  DC      /3200                                  BINT2200
031E    0032              BSS     50                                     BINT2205
0350 0  0F00        FSTK  DC      /0F00     FUNCTION STACK               BINT2210
0351    000F              BSS     15        ALLOW NEST 5 DEEP            BINT2215
0360 1  035E        VSTK  DC      *-3                                    BINT2220
0361    003C              BSS     60                                     BINT2225
                    *     HANDLE FUNCTION CALL OR ARRAY REFERENCE        BINT2230
039D 01 440005CD    IFN   BSI   L GETI      GET FCN ID CODE              BINT2235
039F 30 14057000          CALL    MAP       COMPUTE ADDR OF ELMNT REC    BINT2240
03A1 0  D001              STO     *+1                                    BINT2245
03A2 00 65000000          LDX   L1 *-*      ADDR TO XR1                  BINT2250
03A4 0  C101              LD    1 1         GET FLAGS                    BINT2255
03A5 0  1803              SRA     3                                      BINT2260
03A6 01 4C0403F0          BOD     FUNC                                   BINT2265
                    * ARRAY REFERENCE                                    BINT2270
03A8 0  C045              LD      AK1                                    BINT2275
03A9 0  D041              STO     NSUBS                                  BINT2280
03AA 0  C103              LD    1 3                                      BINT2285
03AB 01 4C0803B2          BNP     AER1      NO 1ST SUBSC                 BINT2290
03AD 0  C104              LD    1 4                                      BINT2295
03AE 01 4C0803B2          BNP     *+2       ONE DIMENSIONAL ARRAY        BINT2300
03B0 01 740103EE          MDM   L NSUBS,1                                BINT2305
03B2 01 440005CD          BSI   L GETI      GET NO. OF ARGS              BINT2310
03B4 0  9036              S       NSUBS     COMPARE WITH NO. OF SUBSCPT  BINT2315
03B5 01 4C2003E7          BNZ     AER2      WRONG NO.                    BINT2320
03B7 01 74FF03EE          MDM   L NSUBS,-1                               BINT2325
03B9 0  7001              B       *+1       TWO DIME ARRAY               BINT2330
03BA 0  7009              B       ONED                                   BINT2335
03BB 01 440002D2          BSI   L GETOP                                  BINT2340
03BD 20 091899C0          LIBF    IFIX                                   BINT2345
03BE 01 4C0803E9          BNP     AER3      0 OR NEG SUBSC               BINT2350
03C0 0  D02C              STO     SB2                                    BINT2355
03C1 0  9104              S     1 4                                      BINT2360
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03C2 01 4C3003F9          BP      AER3      SUBSC GT THAN MAX          BINT2365
03C4 01 440002D2   ONED   BSI  L  GETOP                                BINT2370
03C6 20 091899C0          LIBF    IFIX                                 BINT2375
03C7 01 4C0803E9          BNP     AER3      / OR NEG SUBSC             BINT2380
03C9 0  D022              STO     SB1                                  BINT2385
03CA 0  9103              S     1 3                                    BINT2390
03CB 01 4C3003F9          BP      AER3      SUBSC GT MAX               BINT2395
03CD 0  C01E              LD      SB1                                  BINT2400
03CE 01 740003EB          MDM  L  NSUBS,0                              BINT2405
03D0 0  7001              B       *+1                                  BINT2410
03D1 0  7004              B       AR10                                 BINT2415
03D2 0  901B              S       AK1                                  BINT2420
03D3 0  A104              M     1 4                                    BINT2425
03D4 0  18D0              XCH                                          BINT2430
03D5 0  8017              A       SB2                                  BINT2435
03D6 0  9017       AR10   S       AK1                                  BINT2440
03D7 0  A017              M       PREC                                 BINT2445
03D8 0  18D0              XCH                                          BINT2450
03D9 0  8102              A     1 2                                    BINT2455
03DA 00 84000209          A    L  UAD                                  BINT2460
03DC 30 17922200          CALL    PUSH                                 BINT2465
03DE 1  031D              DC      ASTK                                 BINT2470
03DF 0  7002              B       AER1                                 BINT2475
03E0 01 4C000297          B    L  IOP5                                 BINT2480
03E2 0  612B       AER1   LDX   1 43                                   BINT2485
03E3 30 02159640   AFR    CALL    BERR                                 BINT2490
03E5 01 4C800000          B    I  BINTR                                BINT2495
03E7 0  612C       AER2   LDX   1 44                                   BINT2500
03E8 0  70FA              B       AER                                  BINT2505
03E9 0  612D       AER3   LDX   1 45                                   BINT2510
03EA 0  70F8              B       AER                                  BINT2515
03EB 0  0000       NSUBS  DC      0                                    BINT2520
03EC 0  0000       SB1    DC      0                                    BINT2525
03ED 0  0000       SB2    DC      0                                    BINT2530
03EE 0  0001       AK1    DC      1                                    BINT2535
03EF 0  0003       PREC   DC      3                                    BINT2540
03F0 0  1801       FUNC   SRA     1                                    BINT2545
03F1 01 4C040407          BOD     UFCN      USER FUNCTION              BINT2550
03F3 01 440005CD          BSI  L  GETI      GET NO. OF ARGS            BINT2555
03F5 0  9103              S     1 3         COMPARE WITH TABLE ENTRY   BINT2560
03F6 01 4C1803FD          BZ      LF10                                 BINT2565
03F8 0  612E       LF5    LDX   1 46        NO. OF ARGS NOT CORRECT    BINT2570
03F9 30 02159640          CALL    BERR                                 BINT2575
03FB 01 4C800000          B    I  BINTR                                BINT2580
03FD 0  C102       LF10   LD    1 2         GET FUNCTION NUMBER        BINT2585
03FE 0  D001              STO     *+1                                  BINT2590
03FF 00 66000000          LDX  L2 *-*       FCN NO. TO XR2             BINT2595
0401 01 4E80045B          B    I2 FCNS      BRANCH TO HANDLE FCN       BINT2600
0403 01 440002E7   FCNR   BSI  L  RSLT      STO RESULT ON STACK        BINT2605
0405 01 4C000297          B    L  IOP5                                 BINT2610
                   * USER FUNCTION                                     BINT2615
                   * TO ALLOW RECURSIVE CALL TO ISCAN THE FOLLOWING    BINT2620
                   * VALUES ARE SAVED ON A PUSHDOWN STACK -            BINT2625
                   * ISCAN = RETURN ADDRESS FOR ISCAN SUBROUTINE       BINT2630
                   * SREC = POINTER TO CODE BEING INTERPRETED          BINT2635
                   * LFRT = SWITCH TO INDICATE LEFT OR RIGHT BYTE      BINT2640
                   *                                                   BINT2645
0407 0  C102       UFCN   LD    1 2         GET POINTER TO DEF STMNT   BINT2650
0408 01 4C180452          BZ      UNDEF     UNDEFINED FUNCTION IF ZERO BINT2655
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040A 01 440005CD          BSI  L  GETI      GET NO. OF ARGS                BINT2660
040C 0  9103              S     1 3         COMPARE WITH NO. IN DEFN       BINT2665
040D 01 4C2003F8          BNZ     LF5       EROR IF NOT EQUAL              BINT2670
040F 01 C4000286          LD   L  ISCAN     SAVE ISCAN RETURN ADDRESS      BINT2675
0411 30 17922200          CALL    PUSH                                     BINT2680
0413 1  0350              DC      FSTK      ON FSTK                        BINT2685
0414 0  7042              B       FSERR     ERROR IF STACK FULL            BINT2690
0415 00 C4000206          LD   L  SREC      SAVE CODE POINTER              BINT2695
0417 30 17922200          CALL    PUSH                                     BINT2700
0419 1  0350              DC      FSTK                                     BINT2705
041A 0  703C              B       FSERR                                    BINT2710
041B 00 C4000208          LD   L  LFRT      SAVE LEFT-RIGHT SWITCH         BINT2715
041D 30 17922200          CALL    PUSH                                     BINT2720
041F 1  0350              DC      FSTK                                     BINT2725
0420 0  7036              B       FSERR                                    BINT2730
0421 0  C102              LD    1 2         GET POINTER TO DEF STMNT       BINT2735
0422 00 84000209          A    L  UAD       COMPUTE ABSOLUTE ADDR          BINT2740
0424 00 D4000206          STO  L  SREC      MAKE CODE POINTER              BINT2745
0426 00 74030206          MDM  L  SREC,3    SKIP TO BEGINNING OF CODE      BINT2750
0428 0  1810              SRA     16                                       BINT2755
0429 00 D4000208          STO  L  LFRT      SET TO LEFT BYTE               BINT2760
042B 01 440005CD          BSI  L  GETI      READ FIRST BYTE                BINT2765
042D 01 44000286          BSI  L  ISCAN     ARGS ARE ON STACK - GO         BINT2770
                     *                      HANDLE FUNCTION. FIRST PART    BINT2775
                     *                      OF FCN CODE TAKES ARGS FROM    BINT2780
                     *                      STACK AND STORES IN DUMMY      BINT2785
                     *                      VARIABLE LOCATIONS.            BINT2790
042F 30 17597000          CALL    POP       RESTORE SAVED INFO             BINT2795
0431 1  0350              DC      FSTK      FROM FSTK                      BINT2800
0432 0  7024              B       FSERR     ERROR IF STACK EMPTY           BINT2805
0433 00 D4000208          STO  L  LFRT                                     BINT2810
0435 30 17597000          CALL    POP                                      BINT2815
0437 1  0350              DC      FSTK                                     BINT2820
0438 0  701E              B       FSERR                                    BINT2825
0439 00 D4000206          STO  L  SREC                                     BINT2830
043B 30 17597000          CALL    POP                                      BINT2835
043D 1  0350              DC      FSTK                                     BINT2840
043E 0  7018              B       FSERR                                    BINT2845
043F 01 D4000286          STO  L  ISCAN                                    BINT2850
0441 30 17597000          CALL    POP                                      BINT2855
0443 1  031D              DC      ASTK                                     BINT2860
0444 0  7012              B       FSERR                                    BINT2865
0445 01 4C08044C          BNP     ONSTK                                    BINT2870
0447 0  D001              STO     *+1                                      BINT2875
0448 20 054C4000          LIBF    ELD                                      BINT2880
0449 0  0000              DC      *-*                                      BINT2885
044A 01 4C000403          B    L  FCNR                                     BINT2890
044C 30 17922200    ONSTK CALL    PUSH                                     BINT2895
044E 1  031D              DC      ASTK                                     BINT2900
044F 0  7007              B       FSERR                                    BINT2905
0450 01 4C000297          B    L  IOP5      RETURN - FCN VALUE IN STACK    BINT2910
                     *    ERRORS                                           BINT2915
0452 0  612F        UNDEF LDX   1 47        UNDEFINED FUNCTION             BINT2920
0453 30 02159640          CALL    BERR                                     BINT2925
0455 01 4C800000          B    I  BINTR     STOP INTERPRETING              BINT2930
0457 0  6131        FSERR LDX   1 49        STACK ERROR                    BINT2935
0458 30 02159640          CALL    BERR                                     BINT2940
045A 01 4C800000          B    I  BINTR     STOP INTERPRETING              BINT2945
                     *    LIBRARY FUNCTION TABLE                           BINT2950
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045B                    FCNS   EQU      *-1                                    BINT2955
045C 1   04CC                  DC       RND                                    BINT2960
045D 1   04A7                  DC       INT                                    BINT2965
045E 1   04DC                  DC       SGN                                    BINT2970
045F 1   0468                  DC       SIN                                    BINT2975
0460 1   046E                  DC       COS                                    BINT2980
0461 1   0474                  DC       TAN                                    BINT2985
0462 1   0486                  DC       COT                                    BINT2990
0463 1   0495                  DC       ATN                                    BINT2995
0464 1   049B                  DC       EXP                                    BINT3000
0465 1   04A1                  DC       LOG                                    BINT3005
0466 1   04BF                  DC       ABS                                    BINT3010
0467 1   04C6                  DC       SQR                                    BINT3015
                        *                                                      BINT3020
0468 01 440002D2        SIN    BSI   L  GETOP                                  BINT3025
046A 30 05889545               CALL     ESINE                                  BINT3030
046C 01 4C000403               B     L  FCNR      END SINE FUNCTION            BINT3035
                        *                                                      BINT3040
046E 01 440002D2        COS    BSI   L  GETOP                                  BINT3045
0470 30 050D6895               CALL     ECOSN                                  BINT3050
0472 01 4C000403               B     L  FCNR      END COSINE FUNCTION          BINT3055
                        *                                                      BINT3060
0474 01 440002D2        TAN    BSI   L  GETOP                                  BINT3065
0476 20 058A3580               LIBF     ESTO                                   BINT3070
0477 1   0483                  DC       TANT                                   BINT3075
0478 30 050D6895               CALL     ECOSN                                  BINT3080
047A 20 058A3580               LIBF     ESTO                                   BINT3085
047B 1   02CF                  DC       BOP                                    BINT3090
047C 30 05889540               CALL     ESIN                                   BINT3095
047E 1   0483                  DC       TANT                                   BINT3100
047F 20 05109940               LIBF     EDIV                                   BINT3105
0480 1   02CF                  DC       BOP                                    BINT3110
0481 01 4C000403               B     L  FCNR      END TANGENT FUNCTION         BINT3115
0483     0003           TANT   BSS      3                                      BINT3120
                        *                                                      BINT3125
0486 01 440002D2        COT    BSI   L  GETOP                                  BINT3130
0488 20 058A3580               LIBF     ESTO                                   BINT3135
0489 1   0483                  DC       TANT                                   BINT3140
048A 30 05889545               CALL     ESINE                                  BINT3145
048C 20 058A3580               LIBF     ESTO                                   BINT3150
048D 1   02CF                  DC       BOP                                    BINT3155
048E 30 050D6880               CALL     ECOS                                   BINT3160
0490 1   0483                  DC       TANT                                   BINT3165
0491 20 05109940               LIBF     EDIV                                   BINT3170
0492 1   02CF                  DC       BOP                                    BINT3175
0493 01 4C000403               B     L  FCNR      END COTANGENT FUNCTION       BINT3180
                        *                                                      BINT3185
0495 01 440002D2        ATN    BSI   L  GETOP                                  BINT3190
0497 30 05063540               CALL     EATN                                   BINT3195
0499 01 4C000403               B     L  FCNR      END ATN FUNCTION             BINT3200
                        *                                                      BINT3205
049B 01 440002D2        EXP    BSI   L  GETOP                                  BINT3210
049D 30 059D7540               CALL     EXPN      EXPONENTIAL FUNCTION         BINT3215
049F 01 4C000403               B     L  FCNR                                   BINT3220
                        *                                                      BINT3225
04A1 01 440002D2        LOG    BSI   L  GETOP                                  BINT3230
04A3 30 054D5000               CALL     ELN       NATURAL LOGARITHM            BINT3235
04A5 01 4C000403               B     L  FCNR                                   BINT3240
                        *                                                      BINT3245
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04A7 01 440002D2     INT    BSI   L  GETOP                                    BINT3250
04A9 0  C014                LD       FN80      /80                           BINT3255
04AA 0  937D                S      3 125       -EXP                          BINT3260
04AB 01 4C1004B9            BNN      ZVAL                                    BINT3265
04AD 0  611F                LDX    1 31                                      BINT3270
04AE 0  D001                STO      *+1                                     BINT3275
04AF 00 75000000            MDX   L1 *-*                                     BINT3280
04B1 0  7001                B        *+1                                     BINT3285
04B2 0  7009                B        IFND                                    BINT3290
04B3 0  CB7E                LDD    3 126                                     BINT3295
04B4 0  CB7E                LDD    3 126       GET MANTISSA                  BINT3300
04B5 0  1980                SRT    1 0         SHIFT OFF FRACTIONAL PART     BINT3305
04B6 0  1180                SLT    1 0                                       BINT3310
04B7 0  DB7E                STD    3 126                                     BINT3315
04B8 0  7003                B        IFND                                    BINT3320
04B9 0  10A0         ZVAL   SLT      32                                      BINT3325
04BA 0  D37D                STO    3 125                                     BINT3330
04BB 0  DB7E                STD    3 126                                     BINT3335
04BC 01 4C000403     IFND   B     L  FCNR      END INTEGER FUNCTION          BINT3340
04BE 0  0080         FN80   DC       /80                                     BINT3345
                     *                                                       BINT3350
04BF 01 440002D2     ABS    BSI   L  GETOP                                    BINT3355
04C1 0  C37E                LD     3 126       GET MANTISSA SIGN             BINT3360
04C2 0  4828                SKP      +Z                                      BINT3365
04C3 20 22559000            LIBF     SNR       CHANGE SIGN                   BINT3370
04C4 01 4C000403            B     L  FCNR      END ABS VALUE FUNCTION        BINT3375
                     *                                                       BINT3380
04C6 01 440002D2     SQR    BSI   L  GETOP                                    BINT3385
04C8 30 05898640            CALL     ESQR      SQUARE ROOT                   BINT3390
04CA 01 4C000403            B     L  FCNR                                    BINT3395
                     *                                                       BINT3400
04CC 0  C00A         RND    LD       RN                                      BINT3405
04CD 0  A008                M        C899                                    BINT3410
04CE 0  18D0                XCH                                              BINT3415
04CF 0  E008                AND      RNDM                                    BINT3420
04D0 0  D006                STO      RN                                      BINT3425
04D1 20 064D6063            LIBF     FLOAT                                   BINT3430
04D2 20 05109940            LIBF     EDIV                                    BINT3435
04D3 1  04D9                DC       C32K                                    BINT3440
04D4 01 4C000403            B     L  FCNR      END RANDOM NUMBER GENERATOR   BINT3445
04D6 0  0383         C899   DC       899                                     BINT3450
04D7 0  063D         RN     DC       1597                                    BINT3455
04D8 0  7FFF         RNDM   DC       /7FFF                                   BINT3460
04D9 8F 7FFF0000     C32K   XFLC     32767.                                  BINT3465
                     *                                                       BINT3470
04DC 01 440002D2     SGN    BSI   L  GETOP                                    BINT3475
04DE 0  C37E                LD     3 126                                     BINT3480
04DF 01 4C180403            BZ    L  FCNR                                    BINT3485
04E1 0  D007                STO      SGNT                                    BINT3490
04E2 20 054C4000            LIBF     ELD                                     BINT3495
04E3 1  04EA                DC       CON1                                    BINT3500
04E4 0  C004                LD       SGNT                                    BINT3505
04E5 0  4828                SKP      +Z                                      BINT3510
04E6 20 22559000            LIBF     SNR                                     BINT3515
04E7 01 4C000403            B     L  FCNR      END SIGN FUNCTION             BINT3520
04E9 0  0000         SGNT   DC       0                                       BINT3525
04EA 81 40000000     CON1   XFLC     1.                                      BINT3530
                     *      HANDLE STORE OPERATION                           BINT3535
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04ED 01 440002D2     ISTO  BSI  L  GETOP                                  BINT3540
04EF 30 17597000           CALL     POP                                   BINT3545
04F1 1  031D               DC       ASTK                                  BINT3550
04F2 0  7007               B        ISTOE                                 BINT3555
04F3 01 4C08051B           BNP      STERR      ILLEGAL STORE              BINT3560
04F5 0  D001               STO      *+1                                   BINT3565
04F6 20 058A3580           LIBF     ESTO                                  BINT3570
04F7 0  0000               DC       *-*                                   BINT3575
04F8 01 4C000297           B    L   IOP5                                  BINT3580
04FA 0  6132         ISTOE LDX   1 50         ADDR STACK EMPTY           BINT3585
04FB 30 02159640           CALL     BERR                                  BINT3590
04FD 01 4C800000           B    I   BINTR                                 BINT3595
                     *     HANDLE REVERSE STORE OPERATION                 BINT3600
04FF 30 17597000     ISTOR CALL     POP        GET DUMMY ARG              BINT3605
0501 1  031D               DC       ASTK       FROM ADDRESS STACK         BINT3610
0502 0  70F7               B        ISTOE      ERROR IF STACK EMPTY       BINT3615
0503 01 4C08051B           BNP      STERR      ILLEGAL STORE              BINT3620
0505 0  D003               STO      *+3        SAVE ADDRESS               BINT3625
0506 01 440002D2           BSI  L   GETOP      GET PARAM VALUE            BINT3630
0508 20 058A3580           LIBF     ESTO       STORE TO DUMMY ARG         BINT3635
0509 0  0000               DC       *-*                                   BINT3640
050A 01 4C000297           B    L   IOP5       RETURN                     BINT3645
                     *     HANDLE STORE AND LEAVE ON STACK                BINT3650
050C 01 440002D2     ISTOL BSI  L   GETOP                                 BINT3655
050E 30 17597000           CALL     POP                                   BINT3660
0510 1  031D               DC       ASTK                                  BINT3665
0511 0  70E8               B        ISTOE                                 BINT3670
0512 01 4C08051B           BNP      STERR                                 BINT3675
0514 0  D001               STO      *+1                                   BINT3680
0515 20 058A3580           LIBF     ESTO                                  BINT3685
0516 0  0000               DC       *-*                                   BINT3690
0517 01 440002E7           BSI  L   RSLT                                  BINT3695
0519 01 4C000297           B    L   IOP5                                  BINT3700
051B 0  6130         STERR LDX   1 48         INVALID STORE OP           BINT3705
051C 30 02159640           CALL     BERR                                  BINT3710
051E 01 4C800000           B    I   BINTR                                 BINT3715
                     *                                                    BINT3720
                     *     INTERPRET 'GOSUB' STATEMENT                    BINT3725
                     *                                                    BINT3730
0520 01 C4000041     IGSUB LD    L  BRET+1    SAVE STMNT POINTER           BINT3735
0522 30 17922200           CALL     PUSH                                  BINT3740
0524 1  0537               DC       BSTK                                  BINT3745
0525 0  7002               B        IGSR       ERROR - NESTING TOO DEEP   BINT3750
0526 01 4C000061           B    L   IGOTO      BR TO HANDLE AS 'GOTO'     BINT3755
0528 0  6133         IGSR  LDX   1 51         GOSUB NESTING TOO DEEP     BINT3760
0529 30 02159640           CALL     BERR                                  BINT3765
052B 01 4C800000           B    I   BINTR      STOP INTERPRETING          BINT3770
                     *                                                    BINT3775
                     *     INTERPRET 'RETURN' STATEMENT                   BINT3780
                     *                                                    BINT3785
052D 30 17597000     IRTN  CALL     POP                                   BINT3790
052F 1  0537               DC       BSTK                                  BINT3795
0530 0  7004               B        IRTER      RETURN WITHOUT GOSUB       BINT3800
0531 01 D4000041           STO  L   BRET+1                                BINT3805
0533 01 4C000040           B    L   BRET                                  BINT3810
0535 0  6134         IRTER LDX   1 52         RETURN WITHOUT GOSUB       BINT3815
0536 0  70F2               B        IGSR+1                                BINT3820
0537 0  0500         BSTK  DC       /500       GOSUB - RETURN STACK       BINT3825
0538    0005               BSS      5                                     BINT3830
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                        *                                                    BINT3835
                        *     INTERPRET 'IF' STATEMENT                       BINT3840
                        *                                                    BINT3845
                        *                                                    BINT3850
053D 01 44000286        IIF   BSI  L  ISCAN                                  BINT3855
053F 01 C40005E3              LD   L  INTC                                   BINT3860
0541 0  9023                  S       IF11                                   BINT3865
0542 0  1002                  SLA     2                                      BINT3870
0543 0  D001                  STO     *+1                                    BINT3875
0544 00 66000000              LDX  L2 *-*                                    BINT3880
0546 01 440005CD              BSI  L  GETI                                   BINT3885
0548 01 440002D2              BSI  L  GETOP                                  BINT3890
054A 0  C37E                  LD    3 126                                    BINT3895
054B 01 4E00054D              B    L2 RELS                                   BINT3900
054D 01 4C200040        RELS  BNZ  L  BRET                                   BINT3905
054F 01 4C000061              B    L  IGOTO     EQ                           BINT3910
0551 01 4C180040              BZ   L  BRET                                   BINT3915
0553 01 4C000061              B    L  IGOTO     NE                           BINT3920
0555 01 4C080040              BNP  L  BRET                                   BINT3925
0557 01 4C000061              B    L  IGOTO     GT                           BINT3930
0559 01 4C280040              BN   L  BRET                                   BINT3935
055B 01 4C000061              B    L  IGOTO     GE                           BINT3940
055D 01 4C100040              BNN  L  BRET                                   BINT3945
055F 01 4C000061              B    L  IGOTO     LT                           BINT3950
0561 01 4C300040              BP   L  BRET                                   BINT3955
0563 01 4C000061              B    L  IGOTO     LE                           BINT3960
0565 0  000B            IF11  DC      11                                     BINT3965
                        *                                                    BINT3970
                        *     INTERPRET 'TYPE' STATEMENT                     BINT3975
                        *                                                    BINT3980
0566 01 C40005E3        IKEYB LD   L  INTC                                   BINT3985
0568 00 D4000204              STO  L  KBCP                                   BINT3990
056A 01 4C000040              B    L  BRET                                   BINT3995
                        *                                                    BINT4000
                        *     INTERPRET 'FOR' STATEMENT                      BINT4005
                        *                                                    BINT4010
056C 00 C4000206        IFOR  LD   L  SREC                                   BINT4015
056E 0  D01B                  STO     FINA      SAVE ADDR OF FINAL VALUE     BINT4020
056F 00 74030206              MDM  L  SREC,3                                 BINT4025
0571 00 C4000206              LD   L  SREC                                   BINT4030
0573 0  D012                  STO     INCA      SAVE INCREMENT ADDRESS       BINT4035
0574 00 74030206              MDM  L  SREC,3                                 BINT4040
0576 00 C4800206              LD   I  SREC                                   BINT4045
0578 01 D4000599              STO  L  NXAD+1    SET BRANCH TO 'NEXT'         BINT4050
057A 00 74010206              MDM  L  SREC,1                                 BINT4055
057C 0  1810                  SRA     16                                     BINT4060
057D 00 D4000208              STO  L  LFRT                                   BINT4065
057F 01 440005CD              BSI  L  GETI                                   BINT4070
0581 01 44000286              BSI  L  ISCAN                                  BINT4075
0583 01 440002D2              BSI  L  GETOP                                  BINT4080
0585 20 058A3580              LIBF    ESTO                                   BINT4085
0586 0  0000            INCA  DC      *-*       SAVE INCREMENT               BINT4090
0587 01 440002D2              BSI  L  GETOP                                  BINT4095
0589 20 058A3580              LIBF    ESTO      SAVE FINAL VALUE             BINT4100
058A 0  0000            FINA  DC      *-*                                    BINT4105
058B 01 440002D2              BSI  L  GETOP                                  BINT4110
058D 30 17597000              CALL    POP                                    BINT4115
058F 1  031D                  DC      ASTK                                   BINT4120
0590 0  700B                  B       FERR                                   BINT4125
0591 0  D005                  STO     IXVAR
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0592 0  C0F3                LD      INCA                                    BINT4130
0593 0  D001                STO     *+1                                     BINT4135
0594 20 058A4080            LIBF    ESUB                                    BINT4140
0595 0  0000                DC      *-*                                     BINT4145
0596 20 058A3580            LIBF    ESTO                                    BINT4150
0597 0  0000         IXVAR  DC      *-*                                     BINT4155
0598 00 65000000     NXAD   LDX  L1 *-*                                     BINT4160
059A 01 4C00001E            B    L  ILP       GO TO 'NEXT'                  BINT4165
059C 0  6135         FERR   LDX   1 53                                      BINT4170
059D 30 02159640            CALL    BERR                                    BINT4175
059F 01 4C800000            B    I  BINTR     ERROR RETURN FROM INTERP      BINT4180
05A1 0  0002         NC2    DC      2                                       BINT4185
05A2 0  0003         NC3    DC      3                                       BINT4190
                     *                                                      BINT4195
                     *      INTERPRET 'NEXT' STATEMENT                      BINT4200
                     *                                                      BINT4205
05A3 00 C4800206     INEXT  LD   I  SREC      GET ADDR OF 'FOR'             BINT4210
05A5 0  D026                STO     FORAD                                   BINT4215
05A6 0  80FB                A       NC3       POINT TO INCREMENT            BINT4220
05A7 0  D015                STO     NFIN                                    BINT4225
05A8 0  80F9                A       NC3                                     BINT4230
05A9 0  D00F                STO     NINC                                    BINT4235
05AA 00 74010206            MDM  L  SREC,1                                  BINT4240
05AC 0  1810                SRA     16                                      BINT4245
05AD 00 D4000208            STO  L  LFRT                                    BINT4250
05AF 01 440005CD            BSI  L  GETI                                    BINT4255
05B1 30 14057000            CALL    MAP                                     BINT4260
05B3 0  80ED                A       NC2                                     BINT4265
05B4 0  D002                STO     NTM1                                    BINT4270
05B5 0  D005                STO     NTM2                                    BINT4275
05B6 20 054C4000            LIBF    ELD                                     BINT4280
05B7 0  0000         NTM1   DC      *-*                                     BINT4285
05B8 20 05044100            LIBF    EADD                                    BINT4290
05B9 0  0000         NINC   DC      *-*                                     BINT4295
05BA 20 058A3580            LIBF    ESTO                                    BINT4300
05BB 0  0000         NTM2   DC      *-*                                     BINT4305
05BC 20 058A4080            LIBF    ESUB                                    BINT4310
05BD 0  0000         NFIN   DC      *-*                                     BINT4315
05BE 01 740105B9            MDM  L  NINC,1                                  BINT4320
05C0 01 C48005B9            LD   I  NINC      GET MANTISSA OF STEP          BINT4325
05C2 0  4828                SKP     +Z                                      BINT4330
05C3 20 22559000            LIBF    SNR       REVERSE SIGN ON NEG STEP      BINT4335
05C4 0  C37E                LD    3 126       GET MANTISSA OF DIF           BINT4340
05C5 01 4C300040            BP      BRET      RETURN                        BINT4345
05C7 0  C004                LD      FORAD                                   BINT4350
05C8 01 D4000041            STO  L  BRET+1                                  BINT4355
05CA 01 4C000040            B    L  BRET                                    BINT4360
05CC 0  0000         FORAD  DC      *-*                                     BINT4365
                     *                                                      BINT4370
                     *      ROUTINE TO GET NEXT BYTE OF OBJECT CODE         BINT4375
                     *      BYTE IS STORED AT 'INTC' AND RETURNED IN ACC    BINT4380
                     *                                                      BINT4385
05CD 0  0000         GETI   DC      *-*                                     BINT4390
05CE 00 C4800206            LD   I  SREC      GET WORD                      BINT4395
05D0 00 74000208            MDM  L  LFRT,0    LEFT OR RIGHT BYTE WANTED     BINT4400
05D2 0  7006                B       RT        RIGHT ONE THIS TIME           BINT4405
05D3 0  1808                SRA     8         LEFT ONE                      BINT4410
05D4 0  D00E                STO     INTC      SAVE THE BYTE                 BINT4415
05D5 00 74010208            MDM  L  LFRT,1    SET TO RIGHT                  BINT4420
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05D7 01 4C8005CD          B     I  GETI       EXIT WITH BYTE IN ACC        BINT4425
05D9 00 74FF0208    RT    MDM   L  LFRT,-1    SET TO LEFT                  BINT4430
05DB 0  1000              NOP                 BECAUSE OF SKIP              BINT4435
05DC 00 74010206          MDM   L  SREC,1     POINT TO NEXT WORD           BINT4440
05DE 0  E003              AND      HFF        MASK DESIRED BYTE            BINT4445
05DF 0  D003              STO      INTC       SAVE IT                      BINT4450
05E0 01 4C8005CD          B     I  GETI       EXIT WITH BYTE IN ACC        BINT4455
05E2 0  00FF        HFF   DC       /FF        MASK                         BINT4460
05E3 0  0000        INTC  DC       *-*        BYTE OF CODE SAVED HERE      BINT4465
                    *                                                      BINT4470
05E4                      END                                              BINT4475

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   189 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                      BINT4480

*DELETE              BINTR                                                 BINT4485
CART ID 0001   DB ADDR  3696   DB CNT   0042

*STORE       WS  UA  BINTR                                                 BINT4490
CART ID 0001   DB ADDR  39ED   DB CNT   0042

// EJECT
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// ASM                                                                  BCTL0005
*COMMON 8000                                                            BCTL0010
*LIST                                                                   BCTL0015
                    * CONTROL PROGRAM FOR THE BASIC SYSTEM              BCTL0020
                    * PROVIDES CONTROL SERVICES FOR THE COMPILER AND    BCTL0025
                    * INTERPRETER                                       BCTL0030
                    * ALLOWS FOR BATCHED EXECUTION OF BASIC JOBS        BCTL0035
                          ABS                                           BCTL0040
                          ORG     /1FE                                  BCTL0045
03C0                                                                    BCTL0050
01FE 0   0000       LNUM  DC      0          CURRENT LINE NUMBER        BCTL0055
01FF 0   0000       LNINC DC      0          + N                        BCTL0060
0200 0   0000       LP    DC      0          POINTER TO CURRENT INPUT   BCTL0065
0201 0   0000       C     DC      0          CHAR CURRENTLY UNDER SCAN  BCTL0070
0202 0   0000       TYPE  DC      0          TYPE OF CHRACTER IN 'C'    BCTL0075
0203 0   0000       DBUG  DC      0          DEBUGGING SWITCH           BCTL0080
0204 0   0000       KBCP  DC      0          I/O DEVICE SWITCH          BCTL0085
0205 0   0000       PGOF  DC      0          PAGE OVERFLOW SWITCH       BCTL0090
0206 0   0000       SREC  DC      0          CURR LOC IN STMNT RECORD   BCTL0095
0207 0   0000       LREC  DC      0          LENGTH OF STMNT RECORD     BCTL0100
0208 0   0000       LFRT  DC      0          LEFT OR RIGHT CHAR SWITCH  BCTL0105
0209 0   20C0       UAD   DC      /4000-8000 BEGIN OF USER AREA         BCTL0110
020A 0   0000       LSW   DC      0          LISTING SWITCH             BCTL0115
020B 0   0000       PGCT  DC      0          BINARY PAGE COUNT          BCTL0120
020C     0028       HDNG  BSS     40         HEADING LINE (80 CHARS)    BCTL0125
0234 0   3030       BCBL  DC      /3030      BLANKS                     BCTL0130
0235 0   3030             DC      /3030                                 BCTL0135
0236 0   190A       PAGE  DC      /190A      PA                         BCTL0140
0237 0   100E             DC      /100E      GE                         BCTL0145
0238     0002       PGNO  BSS     2          4 CHARACTER PAGE NO.       BCTL0150
023A 0   3F00             DC      /3F00      END OF HEADING LINE        BCTL0155
023B 0   0000       ERSW  DC      0          ERROR INDICATOR            BCTL0160
0000                NXID  EQU     0                                     BCTL0165
0001                ST    EQU     1                                     BCTL0170
0002                STL   EQU     2                                     BCTL0175
0003                PGO   EQU     3                                     BCTL0180
0004                PGOL  EQU     4                                     BCTL0185
0005                SYM   EQU     5                                     BCTL0190
0002                CON   EQU     2                                     BCTL0195
000E                $CORE EQU     /000E      CORE SIZE LOC              BCTL0200
000F                $CTSW EQU     /000F      MON RECORD TRAP SWITCH     BCTL0205
002C                $IREQ EQU     /2C        INTERRRUPT REQ LOC         BCTL0210
0FB0                SBFR  EQU     /FB0       SUPR BUFFER LOCATION       BCTL0215
023C 0   0014       HDL   DC      20                                    BCTL0220
023D 0   0027       ASTER DC      /27        ASTERISK                   BCTL0225
023E 0   0040       FSTID DC      64         FIRST ELEMENT ID           BCTL0230
023F 0   0001       BCK1  DC      1                                     BCTL0235
0240 0   0000       IREQ  DC      *-*        INT REQ ROUTINE            BCTL0240
0241 0   080A             XIO     SENSE      SENSE KEYBD WITH RESET     BCTL0245
0242 00  4C400244         BOSC L  *          TURN OFF INTERRUPT         BCTL0250
0244 0   6139             LDX   1 57         OPERATOR INTERRUPT         BCTL0255
0245 30  02159640         CALL    BERR                                  BCTL0260
0247 0   1810             SRA     16                                    BCTL0265
0248 0   D0BB             STO     KBCP       SET TO CARD-1403 I/O       BCTL0270
0249 00  4C0002B1         B     L BC15                                  BCTL0275
024C     0001       SENSE BSS   E 1                                     BCTL0280
024D 0   0F01             DC      /0F01                                 BCTL0285
024E 00  65000240   BCTL  LDX   L1 IREQ      SET UP FOR INT REQ         BCTL0290
0250 00  6D00002C         STX   L1 $IREQ                                BCTL0295
0252 00  65800209         LDX   I1 UAD       USER AREA ADDRESS
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0254 00 C400000E        LD    L  $CORE     GET CORE SIZE                  BCTL0300
0256 0  90B2            S        UAD       SUB BEGIN OF USER AREA         BCTL0305
0257 0  D103            STO    1 PG0       REL BEGIN OF SYMBOL TABLE      BCTL0310
0258 0  1810            SRA      16        ZERO THE ACC                   BCTL0315
0259 0  D104            STO    1 PG0L      SYMBOL TABLE LENGTH            BCTL0320
025A 0  D102            STO    1 STL       STMNT RECORDS LENGTH           BCTL0325
025B 0  D0A9            STO      PGOF      PAGE OVERFLOW                  BCTL0330
025C 0  D0A7            STO      KBCP      USE 1403/1442                  BCTL0335
025D 0  D0A0            STO      LNUM      LINE NUMBER                    BCTL0340
025E 0  D0A0            STO      LNINC     INCREMENT                      BCTL0345
025F 0  D0DB            STO      ERSW      ERROR INDICATOR                BCTL0350
0260 0  C0DD            LD       FSTID     GET 1ST ELEMENT ID             BCTL0355
0261 0  D100            STO    1 NXID      SET INTO HEADER                BCTL0360
0262 0  C0D9            LD       HDL       HEADER LENGTH                  BCTL0365
0263 0  D101            STO    1 ST        = BEGIN OF STMNT RECORDS       BCTL0370
0264 0  C0DA            LD       BCK1      CONSTANT 1                     BCTL0375
0265 0  D09D            STO      DBUG      TURN OFF DEBUG                 BCTL0380
0266 0  D0A4            STO      PGCT      PAGE COUNT = 1                 BCTL0385
0267 0  D0A2            STO      LSW       LISTING SWITCH ON              BCTL0390
0268 0  C0CB            LD       BCBL                                     BCTL0395
0269 0  61D8            LDX    1 -40       SET HEADING AREA TO BLANKS     BCTL0400
026A 00 D5000234        STO   L1 HDNG+40                                  BCTL0405
026C 0  7101            MDX    1 1                                       BCTL0410
026D 0  70FC            B        *-4                                      BCTL0415
026E 30 02255000   BC5  CALL     BIN       READ A CARD                    BCTL0420
0270 0  7047            B        MNCTL      MONITOR CTL CARD              BCTL0425
0271 0  D08E            STO      LP        PUT POINTER AT LP              BCTL0430
0272 00 65800200        LDX   I1 LP        GET POINTER TO XR1             BCTL0435
0274 0  C100            LD     1 0         LOAD COL 1                     BCTL0440
0275 0  90C7            S        ASTER     IS IT *                        BCTL0445
0276 00 4C1802E8        BZ       HNDLA     YES, GO HANDLE * CARD          BCTL0450
0278 30 17205044   BC10 CALL     PHEAD     PRINT HEADLING LINE            BCTL0455
027A 30 020D6517        CALL     BCOMP     CALL THE COMPILER              BCTL0460
027C 0  1000            NOP                                               BCTL0465
027D 00 7400023B        MDM   L  ERSW,0    COMPILE ERROR                  BCTL0470
027F 0  7002            B        *+2       YES                            BCTL0475
0280 30 022558D9        CALL     BINTR     CALL THE INTERPRETER           BCTL0480
0282 00 74000032        MDM   L  /32       WAIT FOR I/O TO DIE            BCTL0485
0284 0  70FD            B        *-3                                      BCTL0490
0285 0  1810            SRA      16                                       BCTL0495
0286 00 D4000204        STO   L  KBCP      SET TO 1403,1442               BCTL0500
0288 00 74000203        MDM   L  DBUG,0                                   BCTL0505
028A 0  7026            B        BC15      NO DEBUGGING                   BCTL0510
028B 00 65800209        LDX   I1 UAD       DEBUGGING, SO PRINT            BCTL0515
028D 0  C102            LD     1 STL       LENGTH OF STMNT RECORDS        BCTL0520
028E 0  62FC            LDX    2 -4        AND LENGTH OF SYMBOL TABLE     BCTL0525
028F 0  18D0            XCH                                               BCTL0530
0290 0  1810            SRA      16                                       BCTL0535
0291 0  1084            SLT      4                                        BCTL0540
0292 00 D6000210        STO   L2 HDNG+4                                   BCTL0545
0294 0  7201            MDX    2 1                                       BCTL0550
0295 0  70FA            B        *-6                                      BCTL0555
0296 00 C4000234        LD    L  BCBL                                     BCTL0560
0298 0  1808            SRA      8                                        BCTL0565
0299 00 D4000210        STO   L  HDNG+4                                   BCTL0570
029B 00 D4000211        STO   L  HDNG+5                                   BCTL0575
029D 0  C104            LD     1 PG0L                                     BCTL0580
029E 0  62FC            LDX    2 -4                                       BCTL0585
029F 0  18D0            XCH                                               BCTL0590
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02A0 0  1810                SRA      16                                    BCTL0595
02A1 0  1084                SLT      4                                     BCTL0600
02A2 00 D6000216            STO   L2 HDNG+10                               BCTL0605
02A4 0  7201                MDX    2 1                                     BCTL0610
02A5 0  70FA                B        *-6                                   BCTL0615
02A6 00 C400023A            LD    L  PGNO+2                                BCTL0620
02A8 0  1808                SRA      8                                     BCTL0625
02A9 00 D4000216            STO   L  HDNG+10                               BCTL0630
02AB 00 6500020C            LDX   L1 HDNG                                  BCTL0635
02AD 00 C4000001            LD    L  1                                     BCTL0640
02AF 30 025A48C0            CALL     BOUT                                  BCTL0645
02B1 00 7400000F     BC15   MDM   L  $CTSW,0   CHECK FOR TRAPPED MONITOR   BCTL0650
02B3 0  7006                B        MNCTL+2   CONTROL CARD                BCTL0655
02B4 30 02255000     BC20   CALL     BIN       READ A CARD                 BCTL0660
02B6 0  7001                B        MNCTL     HANDLE MONITOR CTL RECD     BCTL0665
02B7 0  70FC                B        BC20      READ ANOTHER CARD           BCTL0670
                     * CODE TO HANDLE MONITOR CONTROL RECORDS              BCTL0675
02B8 00 D4000200     MNCTL  STO   L  LP        STORE POINTER TO RECORD     BCTL0680
02BA 00 65800200            LDX   I1 LP        POINTER TO XR1              BCTL0685
02BC 0  7103                MDX    1 3         SKIP OVER //B               BCTL0690
02BD 0  1810                SRA      16        RESET CONTROL RECROD        BCTL0695
02BE 00 D400000F            STO   L  $CTSW     TRAP SWITCH                 BCTL0700
02C0 0  62F7                LDX    2 -9                                    BCTL0705
02C1 0  C100         XLP    LD     1 0         TEST FOR 'XEQ BASIC'        BCTL0710
02C2 00 96000338            S     L2 XEQ+9                                 BCTL0715
02C4 00 4C2002CC            BNZ      NTXEQ                                 BCTL0720
02C6 0  7101                MDX    1 1                                     BCTL0725
02C7 0  7201                MDX    2 1                                     BCTL0730
02C8 0  70F8                B        XLP                                   BCTL0735
02C9 20 176558F3            LIBF     PRNT3     IT IS 'XEQ BASIC' SO SKIP   BCTL0740
02CA 0  3100                DC       /3100     TO CHANNEL 1                BCTL0745
02CB 0  7082                B        BCTL      AND START NEW PROGRAM       BCTL0750
                     * RETURN TO MONITOR IF NOT // XEQ BASIC               BCTL0755
02CC 0  61FF         NTXEQ  LDX    1 -1        SET RECROD TRAP SWITCH      BCTL0760
02CD 00 6D00000F            STX   L1 $CTSW                                 BCTL0765
02CF 00 66000FB0            LDX   L2 SBFR      ADDR OF SUPR BUFFER         BCTL0770
02D1 0  6150                LDX    1 80        LENGTH OF BUFFER            BCTL0775
02D2 00 C4000368            LD    L  EBCT+48   LOAD BLANK IN EBCDIC        BCTL0780
02D4 0  D200                STO    2 0         PUT INTO BUFFER             BCTL0785
02D5 0  7201                MDX    2 1         INCR BUFFER POINTER         BCTL0790
02D6 0  71FF                MDX    1 -1        DECR COUNTER                BCTL0795
02D7 0  70FC                B        *-4                                   BCTL0800
02D8 00 66000FB0            LDX   L2 SBFR      ADDR OF SUPR BUFFER         BCTL0805
02DA 00 C4800200     NTLP   LD    I  LP        GET CHAR FROM CARD          BCTL0810
02DC 0  D001                STO      *+1                                   BCTL0815
02DD 00 65000000            LDX   L1 *-*       PUT INTO XR1                BCTL0820
02DF 00 C5000338            LD    L1 EBCT      GET EBCDIC EQUIVALENT       BCTL0825
02E1 0  4808                SKP      +         SKIP IF NOT EOS             BCTL0830
02E2 0  6038                EXIT               QUIT                        BCTL0835
02E3 0  D200                STO    2 0         PUT INTO SUPR BUFFER        BCTL0840
02E4 0  7201                MDX    2 1                                     BCTL0845
02E5 00 74010200            MDM   L  LP,1                                  BCTL0850
02E7 0  70F2                B        NTLP                                  BCTL0855
                     * CODE TO HANDLE *ID OR *NOLIST CARDS                 BCTL0860
02E8 0  C101         HNDLA  LD     1 1         GET COL 2                   BCTL0865
02E9 0  1008                SLA      8                                     BCTL0870
02EA 0  E902                CR     1 2         PACK WITH COL 3             BCTL0875
02EB 0  D042                STO      BCTMP                                 BCTL0880
02EC 0  903D                S        BCID      IS IT 'ID'                  BCTL0885
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02ED 00 4C1802FE          BZ      HDLID     YES                          BCTL0890
02EF 0  C03E              LD      BCTMP                                  BCTL0895
02F0 0  903A              S       BCNO      IS IT 'NO'                   BCTL0900
02F1 00 4C1802FA          BZ      GOR                                    BCTL0905
02F3 0  C03A              LD      BCTMP                                  BCTL0910
02F4 0  9037              S       BCGR      CHECK FOR *GRADE             BCTL0915
02F5 00 4C200278          BNZ     BC10      NO                           BCTL0920
02F7 00 C400023F          LD   L  BCK1                                   BCTL0925
02F9 0  100F              SLA     15        BIT IN POSITION 0            BCTL0930
02FA 00 D400020A   GOR    STO  L  LSW                                    BCTL0935
02FC 00 4C00026E          B    L  BC5       GO READ NEXT CARD            BCTL0940
02FE 00 C4000234   HDLID  LD   L  BCBL                                   BCTL0945
0300 00 D400020C          STO  L  HDNG      2 BLANKS TO HEADING          BCTL0950
0302 00 C4000234          LD   L  BCBL                                   BCTL0955
0304 0  1008              SLA     8                                      BCTL0960
0305 0  E903              OR    1 3         PACK WITH COL 4              BCTL0965
0306 00 D400020D          STO  L  HDNG+1    PLACE IN HEADING             BCTL0970
0308 0  C103              LD    1 3                                      BCTL0975
0309 0  9023              S       BCEOS     IS IT /3F                    BCTL0980
030A 00 4C18026E          BZ      BC5       YES, NO HEADING              BCTL0985
030C 0  7104              MDX   1 4         SKIP OVER 4 COLUMNS          BCTL0990
030D 0  62DA              LDX   2 -38                                    BCTL0995
030E 0  C100       BC30   LD    1 0                                      BCTL1000
030F 0  901D              S       BCEOS     IS IT /3F                    BCTL1005
0310 00 4C18026E          BZ      BC5       YES, SO DONE                 BCTL1010
0312 0  C100              LD    1 0                                      BCTL1015
0313 0  1008              SLA     8                                      BCTL1020
0314 0  D019              STO     BCTMP                                  BCTL1025
0315 0  C101              LD    1 1                                      BCTL1030
0316 0  9016              S       BCEOS     IS IT /3F                    BCTL1035
0317 00 4C180322          BZ      BC40      YES                          BCTL1040
0319 0  C101              LD    1 1                                      BCTL1045
031A 0  E813              OR      BCTMP                                  BCTL1050
031B 00 D6000234          STO  L2 HDNG+40   PUT INTO HEADING             BCTL1055
031D 0  7102              MDX   1 2                                      BCTL1060
031E 0  7201              MDX   2 1                                      BCTL1065
031F 0  70EE              B       BC30                                   BCTL1070
0320 00 4C00026E          B    L  BC5                                    BCTL1075
0322 00 C4000234   BC40   LD   L  BCBL      LOAD BLANK                   BCTL1080
0324 0  1808              SRA     8                                      BCTL1085
0325 0  E808              OR      BCTMP                                  BCTL1090
0326 00 D6000234          STO  L2 HDNG+40                                BCTL1095
0328 00 4C00026E          B    L  BC5                                    BCTL1100
032A 0  120D       BCID   DC      /120D     'ID'                         BCTL1105
032B 0  1718       BCNO   DC      /1718     'NO'                         BCTL1110
032C 0  101B       BCGR   DC      /101B     'GR'                         BCTL1115
032D 0  003F       BCEOS  DC      /3F                                    BCTL1120
032E 0  0000       BCTMP  DC      0         TEMPORARY                    BCTL1125
032F 0  0021       XEQ    DC      /21       X                            BCTL1130
0330 0  000E              DC      /0E       E                            BCTL1135
0331 0  001A              DC      /1A       Q                            BCTL1140
0332 0  0030              DC      /30       BLANK                        BCTL1145
0333 0  000B              DC      /0B       B                            BCTL1150
0334 0  000A              DC      /0A       A                            BCTL1155
0335 0  001C              DC      /1C       S                            BCTL1160
0336 0  0012              DC      /12       I                            BCTL1165
0337 0  000C              DC      /0C       C                            BCTL1170
0338 0  00F0       EBCT   DC      /F0       00                           BCTL1175
0339 0  00F1              DC      /F1       01                           BCTL1180
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033A	0	00F2	DC	/F2	02	BCTL1185
033B	0	00F3	DC	/F3	03	BCTL1190
033C	0	00F4	DC	/F4	04	BCTL1195
033D	0	00F5	DC	/F5	05	BCTL1200
033E	0	00F6	DC	/F6	06	BCTL1205
033F	0	00F7	DC	/F7	07	BCTL1210
0340	0	00F8	DC	/F8	08	BCTL1215
0341	0	00F9	DC	/F9	09	BCTL1220
0342	0	00C1	DC	/C1	10	BCTL1225
0343	0	00C2	DC	/C2	11	BCTL1230
0344	0	00C3	DC	/C3	12	BCTL1235
0345	0	00C4	DC	/C4	13	BCTL1240
0346	0	00C5	DC	/C5	14	BCTL1245
0347	0	00C6	DC	/C6	15	BCTL1250
0348	0	00C7	DC	/C7	16	BCTL1255
0349	0	00C8	DC	/C8	17	BCTL1260
034A	0	00C9	DC	/C9	18	BCTL1265
034B	0	00D1	DC	/D1	19	BCTL1270
034C	0	00D2	DC	/D2	20	BCTL1275
034D	0	00D3	DC	/D3	21	BCTL1280
034E	0	00D4	DC	/D4	22	BCTL1285
034F	0	00D5	DC	/D5	23	BCTL1290
0350	0	00D6	DC	/D6	24	BCTL1295
0351	0	00D7	DC	/D7	25	BCTL1300
0352	0	00D8	DC	/D8	26	BCTL1305
0353	0	00D9	DC	/D9	27	BCTL1310
0354	0	00E2	DC	/E2	28	BCTL1315
0355	0	00E3	DC	/E3	29	BCTL1320
0356	0	00E4	DC	/E4	30	BCTL1325
0357	0	00E5	DC	/E5	31	BCTL1330
0358	0	00E6	DC	/E6	32	BCTL1335
0359	0	00E7	DC	/E7	33	BCTL1340
035A	0	00E8	DC	/E8	34	BCTL1345
035B	0	00E9	DC	/E9	35	BCTL1350
035C	0	004E	DC	/4E	36	BCTL1355
035D	0	0060	DC	/60	37	BCTL1360
035E	0	0061	DC	/61	38	BCTL1365
035F	0	005C	DC	/5C	39	BCTL1370
0360	0	007E	DC	/7E	40	BCTL1375
0361	0	004D	DC	/4D	41	BCTL1380
0362	0	005D	DC	/5D	42	BCTL1385
0363	0	004B	DC	/4B	43	BCTL1390
0364	0	006B	DC	/6B	44	BCTL1395
0365	0	007D	DC	/7D	45	BCTL1400
0366	0	0050	DC	/50	46	BCTL1405
0367	0	005B	DC	/5B	47	BCTL1410
0368	0	0040	DC	/40	48	BCTL1415
0369	0	0040	DC	/40	49	BCTL1420
036A	0	0040	DC	/40	50	BCTL1425
036B	0	0040	DC	/40	51	BCTL1430
036C	0	0040	DC	/40	52	BCTL1435
036D	0	0040	DC	/40	53	BCTL1440
036E	0	0040	DC	/40	54	BCTL1445
036F	0	0040	DC	/40	55	BCTL1450
0370	0	0040	DC	/40	56	BCTL1455
0371	0	0040	DC	/40	57	BCTL1460
0372	0	0040	DC	/40	58	BCTL1465
0373	0	0040	DC	/40	59	BCTL1470
0374	0	0040	DC	/40	60	BCTL1475

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0375 0  0040                DC      /40      61                          BCTL1480
0376 0  0040                DC      /40      62                          BCTL1485
0377 0  0000                DC      /00      EOS                         BCTL1490
0378    024E                END     BCTL                                 BCTL1495

   000 OVERFLOW SECTORS SPECIFIED
   000 OVERFLOW SECTORS REQUIRED
   057 SYMBOLS DEFINED
    NO ERROR(S)  FLAGGED IN ABOVE ASSEMBLY

// DUP                                                                   BCTL1500

*DELETE              BASIC                                              BCTL1505
CART ID 0001   DB ADDR  36A0   DB CNT   0240

*STORECI    WS  UA  BASIC    1                                          BCTL1510
*LOCAL,BCOMP,BINTR                                                      BCTL1515
R 41  00D2 (HEX) WDS UNUSED BY CORE LOAD
CALL TRANSFER VECTOR
 GSYM   158A
 BOUTP  066E
 ESQR   132E
 ELN    129A
 EXPN   120E
 EATN   1178
 ECOS   10EC
 ESIN   10F4
 ECOSN  10EE
 ESINE  10F6
 EAXB   1061
 CCON   0D54
 GCON   0C82
 CLEAR  0B82
 MAP    0C68
 POP    0B92
 ASYM   0C3E
 SSRCH  0BD0
 PUSH   0BAE
 GSYMA  0B34
 GLN    0AF2
 CODE   0A09
 CODEA  0A00
 TSR    09D0
 ASR    09A8
 BSID   0910
 GETC   08F6
 BOUT   0689
 PHEAD  070E
 BIN    057C
 BERR   0378
 BINTR  1848 LOCAL
 BCOMP  184F LOCAL
LIBF TRANSFER VECTOR
 ELDX   0D3C
 PRTY   1786
 HOLL   1736
 ESUBX  0F49
 EADDX  0F55
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PAGE 100
 EGETP   1720
 EDVR    170C
 EMPYX   0FFB
 XMD     16C2
 XDD     1678
 FARC    1656
 NORM    162C
 TYPE0   1470
 CARD0   1378
 SNR     10E4
 EAXI    1096
 FLOAT   1052
 IFIX    1026
 ELD     0D40
 EMPY    0FFC
 EDIV    0FAA
 ESUB    0F44
 EADD    0F4F
 ESTO    0D2A
 PRNT3   07D4
SYSTEM SUBROUTINES
 ILS04   00C4
 ILS02   00B3
 ILS00   1F69
 FLIPR   17E2
      024E (HEX) IS THE EXECUTION ADDR
CART ID 0001   DB ADDR  37F0   DB CNT   0240

// EJECT
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GRANT NUMBER XVII

SEED GRANT PROPOSAL TO EXAMINE THE IMPLICATIONS OF ESTABLISHING CLASS SIZE STANDARDS RELATIVE TO COURSE DESIGN

by

Dr. George L. Melville
Director of Institutional Research
Knox College

January, 1970

This request for seed grant funds from the Consortium of Knox, Franklin and Monmouth Colleges seeks support for an analysis of the implications of initiating standards of enrollment relative to course design. The simple head counting of students in the various classes that occurs at all colleges is largely a waste of time. It does not distinguish small classes that should be small from small classes which ipsy dipsy did not get many students. The figures derived also give impressions of a student-faculty ratio which are misleading and which in no way speak of the effectiveness of the teaching learning situations.

The hope of the present proposal, which is basically for a planning grant, is that we will reach a conception of standards of enrollment for various class sizes, the standard being related to class size and to the teaching technique employed. Actual enrollment figures could then be compared with these standards to identify under enrolled situations as well as overloaded classes. It should become apparent that the actual load on the average course which is neither designed to be large nor designed to be small will depend on the number and kind of courses of specific design that we have.

An award of $500 is requested to support travel to other colleges plus costs of preparation.

GRANT NUMBER XVII

FINAL REPORT

Seed Grant

THE ESTABLISHMENT OF CLASS SIZE STANDARDS RELATIVE TO COURSE DESIGN

George L. Melville

Preface: The establishment of Class Size Standards Relative to Course Design

Supporting this preface are two materials: (1) a copy of a computer summary showing enrollment by student classification in the various classes for a given department in a given term at Knox College (Appendix I); (2) an outline for establishing standards of class size relative to course design and the computation of per cent of standard achieved (Appendix II). The computer summary is an example taken from the reference tables provided by Data Processing each term. These reference tables provide a nebulous conglomeration of data which is summarized for the central administration. Thus the percentage of student load for a department is related to the percentage of faculty belonging to that department. This enrollment to faculty relationship becomes a variable which is weighed with other variables by the President, the Dean of the College, and Department Chairmen in their determination of additions to faculty in given departments. These data are readily available through a computer print-out, and our use of them is typical of such use in higher education.

The outline for computing per cent of standard enrollments relative to course design is quite another matter. It would establish three categories of classes: (1) Category A: classes designed by teaching methods and objectives to be small with the standard size given, (2) Category B: lecture classes of appropriate content designed by personnel, teaching aids, and materials to be large with standards of enrollment given and (3) Category C: classes of non-specific design with a standard of enrollment computed. Thus the standards of

enrollment for very large classes and for specific small classes are stated relative to course design. The computed standard for Category C courses is based on a residue; it is total enrollment less actual enrollment in categories A and B divided by the number of classes of non-specific design. This computed standard would provide the de facto student load facing the average course of non-specific design.

Per cent of standard enrollments would be obtained for each course by dividing actual enrollment by the standard stated or computed for the course and multiplying by 100. The per cent of standard figures would provide specific data reflecting existing enrollment problems: (1) the artificial restriction of class size irrespective of course design; (2) the identification of the inadequacy of demand for certain courses; and (3) the identification of the excess of demand for other courses.

The Problem

For some fifteen years, particularly since Beardsley Rummel's Memo to a College Trustee, the question of the effectiveness of course design in teaching-learning has been related to the economic problems of class size. At Knox College, as indicated in the preface to this proposal, we presently are developing control mechanisms for interpreting class size in terms of course design and objectives. Such procedures for "quality control" and "production control," common as they may be in modern industry, are revolutionary in higher education.[1]

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[1]Some years ago Sharvy G. Umbeck, President of Knox College and a leading analyst in the economics of higher education, observed with some dismay that the very educational institutions which contributed so significantly to the efficiency and effectiveness of modern management were the last to benefit from their own teaching.

The necessity of establishing percentage of standard enrollments is supported by the following considerations.

Firstly, the concept of a faculty-student ratio commonly used by colleges is of very limited usefulness. It provides a mechanical average for an essentially heterogeneous population of values. It is unrelated to specific central tendencies within that population, and it is divorced entirely from value considerations which can be related to specific teaching-learning situations. Knowing that a college's student-faculty ratio is fourteen to one tells us nothing about the average class size, let alone the distribution of class sizes. Even knowing this latter fact would tell us nothing of the relationship of teaching-learning effectiveness to the distribution of class size.

Secondly, it is commonplace that a small class which is designed toward inspiring an interpersonal student-teacher relationship, a class which involves the development and expatiation of individual values, ought to be distinguishable from a small class which simply did not get many students, a class whose teacher lectures merrily away as though he were talking to a room full of people. The former class should be taught as frequently as it can be filled within the limits of its standard enrollment. The latter class is an evidence of an insufficiency of enrollment demand and should either be taught less frequently or changed in design.[2]

Thirdly, large classes can be especially well taught if planned with appropriate audio-visual aids, personnel, room facilities and techniques. Classes

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[2]The problem of the insistance of young faculty to teach special courses in their field and the resulting proliferation of small classes has been discussed by Seymour Harris, Higher Education in the United States, the Economic Problems. Harvard University Press, 1960, pp 131-2. The current proposal would particularly emphasize the development of small class design for these courses.

so designed should be distinguishable from classes of non-specific design which simply have grown large. In the latter case the overload would be flashed by a high per cent of standard figure, indicating that one of two paths should be followed. Either other sections of the course should be provided, retaining it in the C category, or it should be shifted to the B category and designed with different reinforcement patterns and taught with different facilities.

Fourthly, a computed standard for those courses of non-specific design is necessary because the burdens falling on these courses cannot be adequately expressed in terms of the student-faculty ratio. Other factors must be considered. The more classes which restrict their enrollments (category A) the larger the burden on category C classes. Conversely, the more specially designed large classes (category B) which exist the smaller the burden on category C classes. Thus the total enrollment in category C classes is seen to be a residue; it is that enrollment not associated with designedly small or designedly large classes. This residual burden is a fact of college life which would be made explicit through a computed standard class size.

As the above accounting procedures are put into effect two principal problems will arise. (1) There will be faculty resistence to the identification of given courses as category C courses. (2) Substantial resources will be needed to support the revolution in course design which will occur as teachers urge the shifting of their classes from C to A or B categories.

Our solution of the first problem will depend upon how successfully we can overcome the second. The identification of category A classes, for example, will be a relatively simple research process involving a questionnaire sent to faculty and students. The identification would center around faculty-student

intercommunication to class size and the achievement of an interpersonal faculty-student relationship. What is the teaching situation which exists and where is the evidence of community of effort in this small class?

What will happen when the evidences are in dispute, and will not the disputes of many faculty be numerous and continuous? To place the class of a given faculty member in category C when he believes it should be placed in category A is to say to him that one does not believe he is achieving the effect of interpersonal communication with students he thinks he is achieving. At this point he may sue for financial support in revamping his class. Otherwise he must be satisfied to teach the class less frequently or to teach it to larger numbers of students.

In the new system the categorization of classes and standard class sizes will be established by the Committee on Instruction on the basis of data furnished by the Office of Institutional Research. The design of the instruments for collecting data will be approved by the Instruction Committee. The standard class sizes established by this committee will replace the maximum class sizes now initiated autonomously by individual departments. Departmental resistance to giving up initial autonomy will be reduced pari passu funds made available for curriculum redesign.

The end result of the new accounting surely will be to increase the number of category A and B classes and to reduce the number of category C classes. This will mean a highly beneficial growth in the planned relationship of teaching method to class size. It cannot be accomplished without substantial initial costs. The greater the flexibility faculty are permitted in the revision of courses, the more readily funds are available for that purpose, the more willingly will faculty accept the accounting system.

DEPARTMENTAL REGISTRATION MATHEMATICS 2ND TERM 1967 68 APPENDIX I

COURSE NUMBER	INSTRUCTOR	HRS CR	FRESH M	FRESH W	SOPH M	SOPH W	JUNIOR M	JUNIOR W	SENIOR M	SENIOR W	SPEC M	SPEC W	TOTAL M	TOTAL W	TOT STUD	TOT STUD HRS	TOT HRS BY LEVEL
101	G DIMITROFF	1.0	3	8	1	4		2		2		1	4	17	21	21.0	
151 -1	C ALTHEIDE	1.0	7	3	1								8	3	11	11.0	
151 -2	C ALTHEIDE	1.0	12	7	2		2					1	16	8	24	24.0	
152 -1	R STEPHENS	1.0	13	11	1						2		16	11	27	27.0	
152 -2	R HOURSTON	1.0	25	6		1					1		26	7	33	33.0	
152 -3	R BORDEN	1.0	13	8	2	1		1			2		17	10	27	27.0	
152 -4	R HOURSTON	1.0	12	5	2						1		15	5	20	20.0	163.0
311	R BORDEN	1.0	2	3	8	1		1					10	5	15	15.0	
312	C ALTHEIDE	1.0			9	3	1	1	1	1	1		12	5	17	17.0	
319	R BRYAN	1.0			1	2		3	3			1	4	6	10	10.0	
321	R STEPHENS	1.0			10	2	8	4	5	1			23	7	30	30.0	
332	R BRYAN	1.0					5	2	4	3	1	1	10	6	16	16.0	
342	J CANNON	1.0					2	1	7	1	1	1	10	3	13	13.0	
349	R HOURSTON	1.0			1		5	1	5	2			11	3	14	14.0	115.0
401	C ALTHEIDE	1.0							2				2		2	2.0	
402	R BORDEN	1.0							1				1		1	1.0	
402	R HOURSTON	1.0								2				2	2	2.0	5.0
TOT ELECTIONS BY SEX			87	51	38	14	23	16	28	12	9	5	185	98	283	283.0	283.0
TOT ELECTIONS BY CLASS			138		52		39		40		14		283			GRAND TOTALS	
TOT INSTRUCTOR LOAD																	
G DIMITROFF			3	8	1	4		2		2		1	4	17	21	21.0	
C ALTHEIDE			19	10	12	3	3	1	3	1	1	1	38	16	54	54.0	
R STEPHENS			13	11	11	2	8	4	5	1	2		39	18	57	57.0	
R HOURSTON			37	11	3	1	5	1	5	4	2		52	17	69	69.0	
R BORDEN			15	11	10	2		2	1		2		28	15	43	43.0	
R BRYAN					1	2	5	5	7	3	1	2	14	12	26	26.0	
J CANNON																	

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APPENDIX II

Outline For Establishing

Per Cent of Standard Course Enrollment

Actual Enrollment/Standard Enrollment = Per Cent of Standard Enrollment

I. Standard Enrollment

A. Small Classes

1) Seminars of 15 or less: e.g.; Am. Civ.; Con Law; T-groups; Cr Writ; Art & Music, special design of the course establishes the standard enrollment.
2) Teacher-class reaction, 20-22: e.g.; Fr, Eng, For Lang., Speech, special design of the course establishes the standard enrollment.

B. Large Classes

1) 100 and over: e.g., Biol 111, Standard enrollment established by course design.

2) 50-100: Statistics in Soc Science, Psych 111, Pol Sci 201, Geol 121-122, Math 101-102, Standard enrollment established by course design.

C. Other Classes: Computed Standard

1) The total college enrollment less the total actual enrollment in category A and B classes divided by the number of courses in Category C.

2) Any class not specifically designed for a certain number of students fits into this category: typical lecture situation.

II. Uses

A. The achievement of a meaningful per cent of standard enrollment

1) Will indicate which classes, designed to be small, are overloaded.

2) Will indicate the small classes which are not designed to be small.

3) Will provide an internally contrived standard for evaluating enrollment in those courses which have not been designed large or small.

B. The reactivation of thought on the relationship of class size to learning procedures.

1) More classes will be defined by procedures within a given concept of standard. (will fit into the A and B category above)

2) The effect of a few additional large classes on the lowering of the contrived standard (category C) can be easily computed.

3) The cost of classes designed to be small can be weighed in terms of particular learning situations rather than in terms of an abstract value of smallness.

III. Difficulties

A. Arbitrary faculty definitions of standards: everyone may want his class to be a standardized small class.

1) Limited by the teaching procedure used.

2) Limited by departmental commitments to total enrollment: those departments supplying large courses might have more classes designed to be small.

3) In any case course design would be emphasized.

B. Faculty reaction against "computer" designation of standard ("production control")

1) Means the discarding of the "faculty student ratio" as a meaningless average in the total teaching situation.

2) Provides a method of planning to which the alternative is no planning or inferior planning.

January, 1969
George Melville
Office of Institutional
Research

Supplementary Explanations:

Symbols Used

TE: Total enrollment in all courses

$E_{a_1} \ldots E_{a_n}$: Actual enrollment in individual Category A (small) classes.

$S_{a_1} \ldots S_{a_n}$: Standard enrollment in individual Category A classes: Given

$E_{b_1} \ldots E_{b_n}$: Actual enrollment in individual Category B (large) classes.

$S_{b_1} \ldots S_{b_n}$: Standard enrollment in individual Category B classes: Given

$E_{c_1} \ldots E_{c_n}$: Actual enrollment in individual Category C classes.

S_c: The computed standard enrollment for all Category C (indefinite size) classes.

nc: Number of course in Category C.

$PS_{a_1} \ldots PS_{c_n}$: Percent of standard enrollment for each individual class.

Formulations

$PS_{a_1} \ldots PS_{c_n} = E_{a_1}/S_{a_1})(100 \ldots E_{c_n}/S_c)(100)$

S_c: $TE - (E_{a_1} + \ldots + E_{a_n} + E_{b_1} + \ldots E_{b_n}) / nc$

GRANT NUMBER XVIII

SEED GRANT PROPOSAL

EVALUATION OF THE FRESHMAN SEMINAR

Dr. Lewis S. Salter
Dean of the College

Knox College

October, 1969

During this current fall term, 1969-70, we are requiring, for the first time, participation in a one-credit seminar of all entering freshmen. The purpose of the seminar is to develop the oral and written communicative abilities in students, to involve the student in an academic enterprise common to the general Knox community in groups having common academic advisers, and to develop the general topic of "revolution" in the way best suited to the specific group. It is felt that this seminar will provide a learning experience to the student quite different from his high school experiences.

Since the freshman seminar is in its initial experimental stage we shall need to carefully review the impressions of the various participants--students, student leaders, and faculty leaders--as soon after the end of the term as can be arranged. A special one-day program will be developed for this purpose. An ad hoc committee will be formed to make the formal evaluations and recommendations for such changes in the seminar structure as seem appropriate.

This request is for a $500 seed grant to support the substantial resources the college will commit to evaluating the freshman seminar.

GRANT NUMBER XVIII

FINAL REPORT

RECOMMENDATIONS FOR CHANGE IN THE STRUCTURE OF THE KNOX COLLEGE FRESHMAN SEMINAR

Dr. William Matthews
Chairman of the Ad hoc Committee
on the Freshman Seminar

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The one-day program for the evaluation of the Freshman Seminar which was held just prior to the beginning of the winter term revealed a need for revision of the seminar. It was generally agreed by the faculty and student co-leaders that the seminar achieved some of its important goals and should be continued. At the same time weaknesses were acknowledged and recommendations for change were made.

One basic weakness of the seminar, it was agreed, was that some students simply were not interested in this type of experience. Many students had had a similar experience in high school and were anxious to get on with learning in special fields to which they had become oriented. For this reason it was decided to recommend to the faculty that the seminar not be required of all freshman but that freshmen be encouraged to enroll.

A second weakness of the seminar reported by students was that the seminars lacked direction; that students had entered without a clear idea as to their responsibilities in determining the direction of the seminar. Many students simply objected to the paths taken by their group and would have preferred a specific choice of seminar courses in the first place.

To meet these objections it was decided that the seminar would be designed to offer freshmen a range of choices. Co-leaders will present a range of alternative programs from which to choose. A detailed statement of the offering, including assignments, teaching method, and criteria for evaluation will be required of each group of co-leaders. A limited number of seminars will deal with the general topic of education. These seminars

will examine various programs of higher education and guide the student to formulate a program which he will pursue at Knox. The leadership for seminars on "education" will include two student co-leaders and two or more faculty.

The "education" seminars will present their students' programs to the Instruction Committee for review under the rubrics of the satellite curriculum. The "education" seminars will provide information on the number of students interested in such a program and the effectiveness of this type of academic counselling.

A brochure providing detailed description of all seminar offerings will be sent to all entering freshmen for the fall of 1970. The grading procedure for each seminar will be included in the course description. Students will decide whether they wish to participate in the seminar and, if so, which program they wish to select.

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KNOX COLLEGE

FRESHMAN SEMINAR

1970

SOME EXPLANATIONS

If you enroll in a seminar it will count as one of your three classes.

S–U or "satisfactory-unsatisfactory" means that only two grades are given instead of the usual A–B–C–D–F.

Class schedule:

Period 1 – 8:00– 9:15
Period 2 – 9:25–10:40
Period 3 – 10:50–12:05
Period 4 – 1:00– 2:15
Period 5 – 2:25– 3:40
Period 6 – 3:50– 5:05

Complete the enclosed form without delay and mail to Office of the Registrar, Knox College, Galesburg, Ill. 61401.

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Dear Member of the Freshman Class:

I am writing to urge that you carefully consider participating in the Knox Freshman Seminar during your first term at Knox. Because participation is voluntary and not mandatory, it is important that we convey to you something of our enthusiasm for the Seminar. It ought also to be noted that because individual input is so essential for the success of the Seminar, we want volunteers and not participants under compulsion.

The Seminar is still quite new and, accordingly, is experimental in flavor. It arose out of a desire on the part of the faculty to give new students the opportunity to have one course during their first term at Knox which lies outside the conventional "lecture" format. The basic idea is almost primitive in its simplicity: Put a relatively small group of students in informal contact with two (or more) seminar leaders, studying for that term a topic or subject

in depth under the guidance of the leaders. One of the strongest features of the Knox Seminar, we feel, is the fact that the co-leaders for each Seminar section will include an upperclass student as well as a faculty member. The basic outline and the starting point of each particular seminar is the product of the enthusiasms and competencies of the co-leaders, but the subsequent direction and progress of the Seminar depends strongly upon the energies and initiative of the freshman members.

You will find as you peruse the individual Seminar descriptions which follow that a bewildering variety of topics and some real diversity of "learning styles" are offered for your choice. Underlying this variety is a common set of goals and topics:

1. To show the importance of group discussion for learning, with an emphasis on both intellectual rigor and personal sensitivity to the needs of other persons;
2. To provide experience in one's first term at college in those seminar techniques which play such a prominent role in the upperclass years at Knox;
3. To give each participating freshman the basis for extensive acquaintance with a group of fellow freshmen which is rooted in the learning process, rather than in the accidents of dormitory housing;
4. To present the faculty member and student co-leader with the opportunity for informal but extensive interaction with gifted freshmen in a small group context;
5. Finally, as a casual but not unimportant by-product, the encouragement of clarity and honesty of thought in both oral and written communication.

You should know that the Seminar was offered for the first time this past year; there were difficulties and trouble spots, but almost all freshmen thought that it was a rewarding experience. Perhaps the chief change which has been made, as we have attempted to learn from that experience, is to make Seminar participation voluntary for entering freshmen, and to give participants as much choice as possible in picking their Seminar section on the basis of information provided.

I hope you will consider seriously the option of participating in the Seminar, and give careful thought to your election of options from among the various possibilities. It will probably not be possible to give all participants their first choice in Seminar section, but we will come as close as possible to that desirable state of affairs.

Sincerely yours,

Lewis S. Salter
Dean of the College

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WHY READ LITERATURE?

W.E. Brady and S. Suskin **Section A**

Each student in this seminar will attempt to discover just what the function and worth of literature is, as it applies to the individual. Just why do people read books, and why are some of the oldest books read over and over again? In order to explore this question and others dealing with the value of literature, the seminar readings will consist of various essays and articles dealing with the subject of literature itself – fiction, poetry, and drama. This seminar should offer some interest not only to the student who enjoys literature, but also to the student who wishes to broaden his knowledge by developing a feeling for the role of literature in contemporary times. In other words, people with little literary background are encouraged to participate.

Grading procedures: The course will be graded on a satisfactory-unsatisfactory basis, with several short papers or presentations required.

The seminar will meet once a week, on Thursdays from 7–10 p.m. Each meeting will consist of discussions of the assigned reading for that week.

It is hoped that by the end of the seminar period, each student will have developed his own views on the purposes of studying literature – views which may aid him in his future educational experience.

POLITICS AND THE MEDIA

Mr. Bailey, Mary Ann Yurkonis, Laurie Kahn **Section B**

There is little need to convince today's college student of the importance of politics; an undeclared war in Indochina, a crisis in race relations in America, and political trials in our major cities have done that. The purpose of this seminar is to deal with political issues and to study the way in which our understanding of these issues is affected by the press. It would very much seem as if the newspapers and periodicals of this country have great power in shaping opinion – they not only report the news, but they dramatize it, select it, distort it, or just plain omit it.

To determine just how true this is, we will probably begin in the fall by asking each participant to become a faithful reader, indeed a monitor, of almost any newspaper or periodical he chooses. This might mean an establishment newspaper (such as the *New York Times*) or an underground one (perhaps the *Berkeley Tribe*). Or it might mean choosing several periodicals out of a spectrum running from the *National Review* to *Ramparts*. In this way, each member of the seminar would become an expert of sorts on a given paper, if not on a given issue. As a group we would meet together to compare – and argue out – positions. As a group we would also probably de-

cide on the issues to which we might wish to give particular attention (the current elections would be one possibility). And finally, we would probably have some films on contemporary politics to help center (or inflame) discussion.

Meetings will be twice weekly (on Sunday afternoons and one weekday evening). We, the members of the seminar, will jointly decide on the manner of grading. All grades will be given on an S–U basis.

STELLAR STRUCTURES

Gregg Walters and R.S. Borden **Section C**

Suggested reading:

Fred Hoyle, *Frontiers of Astronomy*
George Gamow, *The Birth and Death of the Sun*
Bondi, Hoyle, et al., *Rival Theories of Cosmology*
George Gamow, *The Origin of the Universe*
Russell, Duggan, & Stewart, *Astronomy, Vol. II*

The purpose of the seminar is to investigate the structures, types, and properties of stars, as well as their evolution. Stellar and planetary systems will be discussed.

Each student will be expected to compile a certain amount of material for presentation. Star-gazing will be optional; telescopes are available.

The course will be graded, the grade depending upon presentations made at the seminar and upon the results of a final examination. The seminar will meet Tuesdays and Thursdays from 7:30 to 9 p.m.

There are no prerequisites for the course. A genuine interest in astronomy is important.

HUMAN COMMUNICATION

Karen Ruedi and Michael Crowell **Section D**

We plan to explore, from whatever angles we or other seminar members consider important, the problems and possibilities of communication and understanding between human beings and groups of human beings. Our concern with this topic stems from our belief that society as we know it can only change and grow where there is a willingness on the part of everyone to bridge gaps in understanding and to respect experience and feelings widely different from his own. This is, however, more easily said than done, and we want to consider – by looking at such areas of knowledge as sociolinguistics, sensitivity training, philosophy, literature, and psychology – the possibilities of overcoming the "credibility gaps," social conflicts, personal alienation and isolation, and polarizations which seem to be increasing in our society.

The seminar will be graded S–U, S meaning that participants took the work of the seminar seriously. Specifically, it will mean reasonably consistent attendance at meetings, completion of a small list of common readings, and more extensive readings of a student's choice, and a long paper on some aspects of the general topic. Seminar members will be encouraged to subsitute other kinds of projects for the long paper. We will meet twice a week (for varying lengths of time) during the sixth period and other times for social gatherings, discussions, and some very mild beginning sensitivity training.

Our purpose in all of this is to engage in a kind of mutual education about a problem that we believe is crucial. One of us is an English and philosophy major; the other is an associate professor of English. We make no claim to being experts in this field. We hope that a cooperative attack on the questions can enlighten us all.

APPLICATIONS OF ELEMENTARY STATISTICS AND GAME THEORY

George Dimitroff and James Kovarik **Section E**

The objective of the seminar is for each student to gain appreciation of and insight into the uses and misuses of statistics. Emphasis will be placed on applications rather than the purely mathematical nature of the theories.

A couple of weeks will be spent studying *The Elements of Probability* by Simeon M. Berman, Addison-Wesley, 1969, with discussions in place of lectures as much as possible. This book is very readable and leads quickly and lucidly to essential ideas without developing lots of mathematical structure. From this point the course content will be decided primarily by the members of the class. If interested, the class could spend time discussing some of the reading suggested below or of its own choosing.

Each student will be required to study some aspect of society and eventually to present in writing a proposal for an experiment which would utilize the statistical ideas studied. (Some students might even wish to carry out their proposals!) Each project would (hopefully) be developed, criticized, and improved during the term by discussions of it in class. Students might collaborate or work independently on one or more projects. Topics would hopefully be "relevant" and of such a nature as to be stimulating and instructive to the whole class. The co-leaders have in mind as sample topics the validity of ESP, I Ching, astrology claims, and studies of the use of game theory in the military and in government decision making.

Class meetings would initially be three times per week at a regularly scheduled daytime period. The course will be graded S–U with the students' projects being the primary basis for grading.

Students intending to take this seminar should read one or more of the following during the summer:

The Compleat Strategyst by J.D. Williams

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Two-Person Game Theory by Anatol Rapoport (paperback)

The latter is more complete than the book of Williams, which is perhaps more fun and has more examples.

One-Two-Three. . .Infinity by George Gamow

How to Lie with Statistics by Darrell Huff (paperback)

Game Theory and Related Approaches to Social Behavior edited by Martin Shubik (paperback)

For those interested, *I Ching (The Book of Changes)* is available in paperback by Bantam Books.

SOCIOLOGY AND LITERATURE: A COMPARISON OF TWO PERSPECTIVES ON HUMAN BEHAVIOR

Jack Fitzgerald and Debbie Howard **Section F**

This seminar will approach human behavior from two different perspectives, social scientific and literary. Its purposes are to attempt to discover and articulate some of the basic characteristics as well as the powers and limitations of each of the perspectives.

The reading material will, of course, be drawn from both fields. The literary selections will include contemporary fiction and non-fiction. The social scientific selections will assume no previous experience in the social sciences.

The work for the course will include a substantial amount of reading, three short (four-or-five page) papers, and one longer paper (at the end of the term) in which the student will address himself or herself to the basic issues raised in the seminar. Grading will be on a satisfactory-unsatisfactory basis.

The seminar will be informally structured. The meetings will take place in a variety of settings – usually off-campus – two evenings per week. The sessions will be devoted to discussions, not lectures, and the student will be expected to come prepared to participate.

Summer reading (strongly recommended):

C.P. Snow, *Two Cultures and the Scientific Revolution*

Peter Berger, *Invitation to Sociology*

Jean Paul Sartre, *Literature and Existentialism*

THE EFFECTS OF DRUGS

Larry Clark (student), Henry Houser (sociologist), Russell Sutton (chemist), Gary Francois (psychologist) **Section G**

The study of the effects of drugs is now an area of intensive research. This seminar will rely heavily on new research results and information available to psychologists, sociologists, and others who have worked with drug users. The chemical classification of drugs and the educational literature and programs of the medical profession will be included. The primary objective of the seminar will be to disseminate information and increase understanding of drugs and their effects which is derived from sound research work.

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Teaching methods: Research results and information will be presented for discussion.

Grading: Satisfactory or unsatisfactory.

Work: One term paper, attendance, and class discussion will be the basis for grading.

Attendance: Mandatory.

Time: Tuesdays & Thursdays, Period 6, Room 105, Davis Science Hall.

Text: *Drug Awareness*, R.E. Horman & A.M. Fox, Avon Books, Knox College Book Store, $1.45.

MAN, SCIENCE AND HIS FUTURE

B.W. Geer, Mary Barclay, Michael Stablein **Section H**

General objectives:

1. To relate scientific discoveries to the problems of society and possible implications concerning the future of man.

2. To expose students to the human element of the scientific community.

3. To have a good time.

The course will be conducted in a seminar fashion, so class discussions will be stressed. It will be graded A to F. There will be two three-to-five page papers or one eight-to-ten page paper required, and an oral final administered by two of the co-leaders and one fellow student. The course will meet on Monday and Wednesday fifth period, but this is only tentative. Some night classes will be held in various places (Green Oaks, off-campus, or classrooms).

The topics we would like to discuss are (students are urged to suggest other topics):

1. Can a person be a scientist and a human being at the same time?

2. Ethics – should the scientist have a greater voice in the use of scientific discoveries?

3. Is man too primitive to cope with today's society, which only he can be held responsible for?

4. Scientific discoveries and their implications on the future.

5. Man as an animal – his behavior, aggressions, etc.

6. Past adaptations of scientific discoveries to societal problems and what can we surmise for the future.

7. Ecology (pollution, environment) – problems and methods.

8. The religious and moral implications of the popu-

lation problem -- family planning, birth control, etc.

9. Evolution -- has man stopped evolving?

10. Cultural evolution -- individual freedom versus obligations to society.

Students are urged to read the following four books over the summer:

The Double Helix, J.D. Watson
Cat's Cradle, Kurt Vonnegut, Jr.
Science and Survival, Barry Commoner
Relationship between Social Classes, Herbert Spencer

The following comprises a tentative list of books for the remainder of the course:

Brave New World, Aldous Huxley
Huxley's Island, Aldous Huxley
Biological Time Bomb, Gordon Taylor
Human Zoo, Desmond Morris
On Aggression, Conrad Lorenz

EXPLORATIONS IN CHARACTER AND EXPERIENCE
Professor P.S. Haring and Mr. Ian Kopelman Section I

This course is for students who like to discuss, who want perspective on what can be made .. their lives (for which they read autobiographies), and think that history and economics are relevant to current world problems including the student revolt. Success depends on what each discovers for himself and is willing to argue about; the instructors will not lecture but join the battle. In addition, students may get experience in political action by working with local political parties in the fall election.

The class meets Mondays, Wednesdays and Fridays, fifth period. Students are graded A through F on discussion and one paper describing what has been learned.

The class reads Muller, *The Uses of the Past* and Heilbroner, *The Worldly Philosophers*, both purchasable on campus. Each student purchases three to five of the following -- before arrival on campus -- for reading during the term:

Adams, Henry, *The Education of* (Houghton Mifflin, $2.65)
Augustine, *Confessions* (Image, $1.45)
Cellini, *Autobiography* (Dolphin, $1.25)
Chaudhuri, N.C., *Autobiography* (Calif. U.P., $2.95)
Churchill, W. *My Early Life* (Scribner, $1.65)
Darwin, *Autobiography* (Norton, $1.95)
de Saint Simon, *Age of Magnificence* (Capricorn, $1.85)
Evtushenko, *Precocious Autobiography* (Dutton, $1.50
Gandhi, *Essential Gandhi* (Vintage, $2.45)
Hoffer, *Working and Thinking* (Harper, $.75)
Johnson, J.W., *Along This Way* (Viking, $2.25)

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Kazin, A., *Starting Out in the Thirties* (Little Brown, $1.95, *Walking in the City* (Grove, $1.95)
Maugham, W.S., *Summing Up* (Pocket, $.95)
Newman, J.H., *Apologia* (Image, $1.35)
Nizer, L., *My Life in Court* (Pyramid, $.95)
Norris, G., *Fighting Liberal* (Collier, $1.50)
Orwell, G., *Down and Out* (Berkley Pub., $.75)
Rousseau, J.J., *Confessions* (Penguin, $2.25)
Schoenberner, F., *Confessions of a European Intellectual* (Collier, $2.95)
Schultz, J.W., *My Life as an Indian* (Fawcett, $.75)
Smith, L., *Journey* (Norton, $1.95)
Spender, S., *Autobiography* (Calif. U.P., $1.95)
Strawinsky, I., *Autobiography* (Norton, $1.75)
Tillich, P., *On the Boundary* (Scribner, $1.25)
Williams, W.C., *Autobiography* (New Directions, $2.25)
Yeats, W., *Autobiography* (Collier, $1.95)

THE DAY THE SCHOOL BURNED DOWN
Nancy Becker, Robert Hellenga, Paul Jennings Section J

Educational plans and ideals -- I know in my case I had none; college was simply the next step after high school and was taken with almost no regard (as I remember it) to ultimate goals. "Going to school," I believe, seems to most students to be simply a fact of life for an 18-year-old American, rather than a deliberately worked-for end or means to an end. --Paul

Both incendiaries and firemen are invited to join us in an attempt to decide whether or not we are willing to let traditional educational objectives go up in smoke. In other words, we want to ask some ultimate questions about the nature of education and to explore some of the wild new possibilities which are being offered as alternatives to the aims and methods of "liberal" education.

We'll begin with the questions. Students should read (during the summer) A.S. Neill's *Summerhill: A Radical Approach to Child Rearing* (Hart Publishing Company, New York, $1.95) and ponder its implications for their own lives. What would they be like if they had gone to Summerhill? What has their own education done for (or to) them? Is it too late to apply Neill's concepts to their own education? --R.H.

Yah, this is cool, but it's kind of linear. I'd just like to add that I hope to see all you "electric kids" at our seminar, and have lots of fun. --Nancy

Students will be expected to take an active part in the seminar meetings (Thursday evenings, hopefully in faculty or student apartments), to do some independent reading (or exploring) in the field of education, and to work out a term project (or projects) with the co-leaders. Grading will be satisfactory-unsatisfactory.

ART IN CONTEMPORARY SOCIETY

Ronald Kogen, Sandra Hanna, Richard Riddell Section K

Procedures, activities, objectives:

We plan to explore ideas which are common to all of the fine arts, and to consider ways in which the arts relate to our personal lives. Types of topics we might explore would be: The role and significance of art in society; art as a means of communication; concepts of aesthetics and values in the arts.

We hope that the group will attend at least one concert, play, exhibit, dance program, film, etc., a week, and seminar discussions will evolve from these experiences. Interviews with creative and performing artists are planned, and problems of artistic creation, preparation, and interpretation will be discussed.

Meeting plans and requirements:

Seminar meetings will occur approximately twice a week, mainly in the evenings and on weekends. Reasonably consistent attendance is assumed. Each student will be responsible for developing a project, either individually or in a small group, which entails significant effort and provides a worthwhile learning experience. The method and form of the project will be determined by the student and will require approval of the co-leaders.

Exams and grading:

No exams. Grading will be satisfactory or unsatisfactory to be determined by the co-leaders.

Suggested readings:

Edman, Irwin, *Arts and the Man* (Norton & Co.)

Hospers, John, *Meaning and Truth in the Arts* (University of North Carolina Press

Langer, Susanne K., *Feeling and Form* (Scribner and Sons)

(All of the above are available in paperback editions)

Special note: This seminar is only recommended for students who have had previous experience in some form of the arts, and are seriously involved or oriented in this area.

Bob Kouser (peering meekly from behind rows of test tubes)

Wally Trattner (wondering why her father named her Wally)

and

Ron Tomlin (brooding over a dusty volume, wishing he had his guitar)

Announce

in joyous three part harmony

THE SEMINAR IN AMERICAN LIFESTYLES

Section L

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which, roughly translated, is the combination of your interests, your initiative, and your ideas.

Here is the opportunity to escape the boring sterility of the high school classroom.

Here is the opportunity to engage in a new living-learning concept designed with YOU in mind.

Here is the opportunity for true study, real creativity, and communication.

Biweekly meetings in the evenings provide you an opportunity to earn an S (or U) in creative investigations of American lifestyles on both a general subcultural and personal level. Enlightening workshops in communication techniques will open vistas for individual expression.

Send in your application NOW and receive a FREE COLOR POSTER KIT!!!

REVOLUTION

Miss Marita DeRoo, Mr. Robin Metz,
Miss Gayle Viverito Section M

A seminar designed for those anxious to study the continuing conflict of individual freedom and collective authority as viewed from a variety of psychological, philosophical, historical, literary, political, social, and cultural perspectives. Regular weekly meetings (Tuesday evening, 7:30–10:30) will be conducted off-campus whenever possible – preferably in student and faculty homes or apartments. Although discussion will focus primarily on the assigned reading (see below), attempts will be made to include discussion of additional books, magazine and/or newspaper articles, films, paintings, sculpture, architecture, music, etc., when deemed pertinent by the group as a whole. It is expected that each seminar member will: (a) participate actively in all weekly discussions, (b) help to conduct at least one seminar meeting by himself, (c) keep an informal journal of the group's activities, (d) complete a term "project." "Projects" may be thought of as a substantial paper (approximately 20 pages) or its equivalent – i.e., a number of shorter papers, a program of community action, a dramatic or cinematic production, a series of paintings, photographs, stories, poems, etc. – which in some way reflects the concerns of the course. No tests or examinations are planned. The course will be graded on a satisfactory-unsatisfactory basis.

Summer reading list:

The Making of a Counter Culture, Theodore Roszak; *Points of Rebellion*, William O. Douglas; *Movement and Revolution*, Berger and Neuhaus; *In the Country of the Young*, John Aldridge

Term reading list (tentative):

"Civil Disobedience," Thoreau; "Reflections on the Revolution in France," Burke; *Revolution for the Hell of*

It, Hoffman; *Diary of Che Guevara; Confessions of Nat Turner*, Styron; *Soul on Ice*, Cleaver or *Wretched of the Earth*, Fanon; *Antigone*, Sophocles; *Henry IV, Part I*, Shakespeare; "Billy Budd," Melville; *Player Piano*, Vonnegut; *Education and the Barricades*, Frankel; *Young Radicals*, Keniston; *Conflict of Generations*, Feuer; *Growing Up Absurd*, Goodman; *Culture and Commitment*, Mead; *Anatomy of a Revolution*, Brinton.

CONTEMPORARY MAN IN RELATION TO HIMSELF AND HIS FELLOW MAN
Greg Busch and Ken Pahel **Section N**

Method of grading: S–U.

Plans for meeting: Two afternoons each week.

Work load: At least one critical problem paper (relatively short), and a longer paper dealing with a summary and evaluation of the student's experiences during the seminar.

Educational objectives: (1) We will endeavor, as a group, to foster an intelligent and creative response to a spectrum of contemporary problems. (2) We will attempt to develop a coherent framework of ideas which will allow us to relate the diverse elements of experience in the now generation.

Teaching methods: Group discussion will be the principal mode of teaching. There will be group initiated projects, films, etc.

Reading list: *Philosophy for a New Generation*, a book of readings edited by A.K. Bierman and James A. Gould. Also some selected articles and chapters of books will be distributed.

General description: We will consider together a number of contemporary philosophical and social problems pertaining generally to man's view of himself and his fellow man. Such areas as (1) the impact of science and technology, (2) political flux: freedom, violence, and revolution, (3) morality: old and new, and (4) education and the role of the college will constitute the focus of the seminar. We hope that the broad scope of this study will allow for an appreciation and understanding of our particular historical context.

SEMINAR IN PERSONAL SOCIALIZATION
John and Caroline Hayes, R.F. Seibert **Section O**

Books for the seminar:

Dawson and Prewitt, *Political Socialization*
Paul Goodman, *Growing Up Absurd*
Goffmann, *The Presentation of Self in Everyday Life*
Michael Brown, *The Politics and Anti-Politics of the Young*

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McLuhan, *Understanding Media* (excerpts) and other Xeroxed materials

Syllabus (based on the assumption of two sessions a week, or 20 sessions over the term):

I. Dawson and Prewitt: gather basic overview of process of socialization and become aware of products, processes, and agents. Read over summer and discuss for two sessions.

II. Goodman: presents a view of the socialization process from a cynical perspective. Focuses on specific agents and specific products. Concepts similar to those in Brown, but Goodman is more general. Five sessions.

III. McLuhan and other Xeroxed materials: an in-depth view of each of the five socializing agents (i.e. family, educational system, primary and secondary groups, mass media, political community). Five sessions.

IV. Goffman: study the social expectations of an individual and the ways in which he presents himself to others. By certain presentations he can manipulate opinion of himself. Brief study of cognitive dissonance. Four sessions.

V. Brown: after previous aspects of socialization studied, analyze ideas in Brown in terms of expectations of others, past socialization, and present situation and knowledge. Four sessions.

A paper of indeterminate length will be required. The paper will involve each individual evaluating himself and others in terms of ideas from Brown, past experiences, and present experiences at Knox. This paper will require the student to incorporate the presented material with whatever outside experiences he may be able to bring to light, as well as his own analysis of what has been presented. This type of paper is not bound to be a term paper as such, but will afford the student the chance to evaluate his past experiences for their effect on his social makeup, and will further afford the student a opportunity to analyze the Knox environment. This course, and especially this paper, will make him aware of the forces that have shaped him and are trying to shape him, and it will therefore allow him to realize his own potential to shape his own life as he wishes.

Grading will be satisfactory-unsatisfactory.

PLAY
Lani McClendon, Julian Tatarsky, Jan Whisler **Section P**

Lani – Pronounced lannie. A sopomore at Knox. Was raised in Waukegan, then moved to a green-grass-money suburb of Chicago, which makes me a part of the Elite of America [sic]. GLENCOE. I want to play games. Games

that get your whole body into moving – using it. Doing it. Games that make you think. Thinking differently – from new perspectives. Group games that give a together feeling. Games are an important part of each of us.

Julian – I was raised in Chicago, a rather quiet, shy youth. I am still quiet, but not as much as before. I went to school at Illinois and Wayne State. I married Kathy in Detroit two years ago. We have no children. We enjoy Knox, and we're slowly adjusting to a town smaller than we're accustomed. I've been teaching at Knox one year. I like to experiment with teaching. This makes me uncertain and somewhat anxious about my courses, but I'd like to learn something from them, not just teach something. I'd like this seminar to be approached by each participant with the attitude of both teacher and learner. The "teaching attitude" implies participation, involvement. The "learning attitude" has implied absorption, minimal participation (sponge analogy). I believe the "teaching attitude" is necessary for proper learning to occur. We will play, observe play, think and read about play. Young children play seriously and learn from their play. "Child's play" is not serious to older children (adolescents). But some forms of older children's play are serious learning experiences. These forms involve learning about social relationships, or human inter-play.

John – Columbia, Mo., Chicago, Park Forest. 17 years of suburbia, 13 years of public school education, and 20 years of this culture culminated in misspelling my name on my Knox application but learning to spell Amerika [sic] correctly. . . . This is it; the game is all. We'll play games for the mind, games for the body. Games to make us closer, games to make us feel, games to make us learn. FUN! You can't have fun in a gray, college credit course. It's subversive. It's anti-Amerikan [sic]. So be subversive, have fun. Come and play! Do it!!!!

Details – graded S–U; meets one night/week, indefinite lengths, gotta come; summer preparation – have fun.

SOCIETY AGAINST ITSELF: CONFLICT AND RESOLUTION

Ross Vander Meulen, Ellen Brady, Carol Smith Section Q

The objective of this seminar is to examine critical social conflicts as they exist today and have existed in the past. The procedure will be to read and discuss various works, both fiction and non-fiction, which deal with such conflicts. Two of the questions which the seminar will seek to answer or at least to explore are: 1) What kinds of conflict are destructive to a free, stable society? What kinds are constructive? 2) Is there any general pattern to the way in which serious social conflicts are resolved? A tentative reading list includes the following:

Paul Ehrlich, *The Population Bomb.*

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Robert Ardrey, *African Genesis.*
Thucydides, *The Peloponnesian War.*
William Golding, *Lord of the Flies.*
Abbie Hoffman, *Revolution for the Hell of It.*
Floyd Barbour (ed.), *The Black Power Revolt.*
B.F. Skinner, *Walden II.*

Present plans are to meet from 6 to 8 one evening per week. The grading will be on an S–U basis. To receive an S, the student will be expected to participate in class discussions and write two acceptable papers (800 to 1000 words each).

PERMANENCE AND CHANGE

Mitzi Feldmann, Robert C. Whitlatch Section R

Exploration of the effects which rapid change in all parts of our society creates for the individual. Theories of permanence and change, and the concepts of progress and evolution, will be examined through reading, discussion, and group activities. The group will then decide which areas (social, political, cultural, technological, educational, artistic, etc.) will be selected for examination in detail. Three books (Eric Hoffer's *The Ordeal of Change,* Erich Kahler's *Out of the Labyrinth,* and Arnold Toynbee's *Change and Habit)* will serve as the springboards for initial discussions. Further reading will be determined by the specific directions the group establishes. Each student will do a personal paper examining himself and his future in light of change and permanence in those areas closest to him – to determine how he can come to grips with a problem which is central to the human condition's concern with values, psychic health, and a life style.

Grading will be S–U and will be determined by the co-leaders on the basis of participation in group discussions and activities, readings, and the paper described above.

Meetings will be held Tuesdays and Thursdays from 6 to 8 p.m., with additional activities to be determined from time to time by the group.

THE CRISIS OF SURVIVAL

Douglas Wilson Section S

Readings, discussions, and field trips directed toward a consideration of critical problems which threaten the future of man, such as population and pollution. Emphasis and appropriate format to be decided by members of the seminar. Group and individual projects. Active participation and written work required.

We will decide as a group when and where to meet.

Grading will be satisfactory-unsatisfactory.

CONFLICT

Lynn Rendall, Jerry Tatar, Frank Young **Section T**

This course will examine some of the conflicting ideas about areas of tension in our society. We will examine the conflict which arises between the individual and the state, between ends and means, between order and justice, and between nations. We will read about topics such as civil disobedience, revolution, nonviolence, war, social change, law enforcement, and civil liberties.

The assigned reading will consist primarily of pamphlets and short essays. The reading assignment for each week will present at least two (and probably more) different ideas about a single controversial topic.

This seminar will attempt to develop the ability to read critically, to encourage the formulation of well thought out opinions on controversial matters, and to sharpen the skills used to defend one's own ideas. The method which the leaders have decided to use to attain these goals is structured but flexible. Every member of the seminar (including the leaders) is required to prepare a one-or-two-page "position paper" each week. This paper should concisely present the author's own opinion about some aspect of the reading topic for that week. Class meetings will be informal but the procedure will be to discuss papers selected at random.

Class meetings are scheduled Tuesday and Thursday evenings from 6 to 8. Grading will be S–U. No examinations. Extra reading leading to a longer paper is encouraged but not required.

The leaders of this seminar expect to read quite a few books this summer in order to be better prepared to participate in the course. We encourage you to join us. Just follow your inclinations in the areas mentioned in the first paragraph. If you would like some suggestions write to Frank Young at Knox College, giving some indication of what you are interested in.

GRANT NUMBER XVIX

CORD

Seed Grant Proposal

AUDIOVISUAL MATERIAL AS MEDIA FOR DESIGN INSTRUCTION

Professor George L. Waltershausen

Monmouth College

Monmouth, Illinois

Submitted

November 29, 1968

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AUDIOVISUAL MATERIAL AS MEDIA FOR
DESIGN INSTRUCTION

In elementary college art courses dealing with the elements of design (line, shape, color, texture, and space), film, slide photography, television and video tape should be used by students to provide for more continuity in symbol formation. Conventional projects for studying these basic elements are quite often static and isolated. The initiator believes that a better presentation of the development and the finished design will be obtained through the audiovisual media mentioned above. This approach will allow more variations in the visualization of student ideas.

Paper, paint, and similar materials usually used in design instruction hamper the presentation of the various projects to the class, and continuity is often lost even to the individual student.

Motion, space, and time can be relevant not specifically as an end, but as a continuum of the projects covering the elements of design. The proposed media can provide the student the opportunity to try more ideas. The relevance or irrelevance of each step or variation in the development of a design will be more apparent to the individual student and the class.

The use of television, film, or slide photography in design or other art instruction is usually as an extension of the textbook to explain various processes or artists. Often these media are used as playback devices. Occasionally there are separate projects covering specific techniques in these media.

There appears to be little or no use of these media as student working materials in situations with any similarity to design classes at Monmouth College, Monmouth, Illinois.

In 1966, these media were utilized by the initiator in a design class by several students on a voluntary basis for one project only. The following year an entire class was assigned one project using these media. These experiences seem to indicate that clarity of expression is enhanced and the students appeared to have more motivation. It is the purpose of this proposal to test the effectiveness of this method of presentation if applied throughout the course rather than in a single project.

Past experience indicates that half of the design class will prefer to work with the audiovisual media (group 1) and half (group 2) will be reluctant to do so. If this natural division does not occur, an arbitrary random selection will be made by the initiator. The population to be sampled is predominatly sophomore and junior Art majors who are full-time registrants at Monmouth College, Monmouth, Illinois. The class size will be approximately twenty-six students.

The class divisions will be designated A and B, experimental and control, respectively. A random assignment subdividing A and B each into two equal subgroups, A1, A2, B1, and B2, described as follows:

A1 initially assigned experimental class using audiovisual media

A2 randomly assigned members from 2 to experimental class using audiovisual media

B1 randomly assigned members from 1 to control class not using audiovisual media

B2 initially assigned control class not using audiovisual media

The purpose of the random reassignment is to test the effectiveness of the media regardless of any personal bias of the registrants. During the term each student will prepare and present four projects with background material. The projects will be evaluated by a panel of three artists two of whom are members of the Art Department of Monmouth College, Monmouth, Illinois, and one independent designer with college teaching experience. The projects will be considered in terms of immediacy of response by the viewer, clearness of thought, importance of theme, ease of comprehension of theme with possible related ideas, and overall esthetic quality. Comparative evaluation will be made on a numerical scale from 1 through 5.

In addition to the ratings of the panel of artists, each class member will complete a questionnaire designed by the initiator to determine his reaction to the procedures employed in class.

Significance of results will be determined by t-test since the samples are small.

This study should enable the Art Department to determine if the utilization of these media as design materials is feasible, and to what degree. It should help to enable the initiator to determine problems, technical or otherwise, which might tend to detract from the expected improvement of student output when these media are utilized. Thus a more effective procedure involving the utilization of these media can be developed for future classes in design.

BUDGET

1 video tape	$ 59.00
audio tape	10.00
photographic materials	30.00
consultant fees	212.00
preparation of tests & testing materials	100.00
student assistant salary 50 hrs. @ $1.15 per hr.	57.50
office supplies & materials	31.50
Total	$500.00

GRANT NUMBER XVIX

FINAL REPORT

AUDIOVISUAL MATERIAL AS MEDIA FOR DESIGN INSTRUCTION

George L. Waltershausen

A REPORT OF THE SEED GRANT PROPOSAL OF

GEORGE L. WALTERSHAUSEN

ENTITLED

"AUDIOVISUAL MATERIAL AS MEDIA FOR DESIGN INSTRUCTION"

Audiovisual materials such as motion picture film, slides and television should be desirable media for the use of students in basic design courses. The range of techniques workable with these materials cover most of the basic design problems in the course at Monmouth College. Shape, line, texture, color and other elements can be studied with these materials as well as with the usual design materials of construction paper, paint, pen and ink, etc. Students have seemed highly motivated to use the audiovisual materials. The reaction to a presentation of design projects done with the audiovisual media has been more pronounced than to displays or exhibits of the usual design projects. This is true of those participating in the class as well as those who have no connection with such classes. Experience indicated that the use of the audiovisual media could be more extensive than in previous practice, even to the utilization of these media as the main tool used in the basic design classes.

The basic design class, Art 211, taught in the winter term of the 1968-69 academic year, was used as a laboratory to test the idea that audiovisual materials could be used effectively throughout the duration of the class. Experience had indicated that approximately half of the design class preferred to work with the audiovisual media (group 1); the other half (group 2) were reluctant to do so. Those who expressed reluctance seemed mainly concerned with their ability in camera use.

The population sampled was predominately junior and sophomore Art majors who were full-time registrant at Monmouth College, Monmouth, Illinois. The class size was twenty-five.

The class divisions were designated A and B, experimental and control, respectively. A random assignment subdivided A and B each into two subgroups, A1, A2, B1 and B2 described as follows:

- A1 initially assigned experimental class using audiovisual media
- A2 randomly assigned members from 2 to experimental class using audiovisual media
- B1 randomly assigned members from 1 to control class not using audiovisual media
- B2 initially assigned control class not using audiovisual media

With attrition and other difficulties the originally numerical division changed.

The purpose of the random reassignment was to test the effectiveness of the media regardless of any personal bias of the registrants. Four themes or topics were presented to the class at equal intervals for analysis and treatment in a series of problems dealing with the basic elements of design. Only one aspect could not be covered by those using audiovisual materials, which was three dimensional. With the last topic,

students who so desired were allowed to change to work with the other media. The projects were evaluated by two artists one of whom is a member of the Art Department of Monmouth College and the other an independent designer with college teaching experience. Comparative evaluation was made on a numerical scale of 1 through 5, with 5 as high. 0 indicated no project available for evaluation. In addition to the ratings of the artists, each class member was asked to complete a questionnaire designed by the instructor to determine reaction to the procedures employed in the class.

The averages of all students in all groups indicated no particular progress or decline in the quality of work through the term. It must be noted that the evaluations of A1, those students who preferred to work with the audiovisual media, were the lowest of the four groups. T-test indicates a significant difference between A1 and B2. There is no significant difference between A1 and any of the other groups.

The fourth project presented a slightly lower evaluation for those from Group A working with the regular design media for the first time, with the exception of students N and W. However, for several students from Group B (E, H and O), working with the audiovisual materials for the first time, the averages of the evaluations indicate a consistent, or rising level of performance.

On the basis of the evaluations, the audiovisual media were not significant by comparison with the regular basic design media. The low evaluations from the experimental group A1, a group which would have been expected to produce high results, are interesting. This may indicate a bias on the part of the evaluators towards the regular design media, although the notes of the instructor underline the low performance on the part of group A1. The evaluations might imply that either those students indicating a preference for the audiovisual media were, for reasons not measured in the testing, not able to work up to the level of the rest of the class, or the results of those students who were withheld from working with the audiovisual media were better despite their original preferences, or both conditions might contribute to this result. It would appear that the audiovisual do not provide, after all, the benefits for the students that justify their large scale use in the basic design classes.

The techniques involved in this class were super eight mm movie film, hand-made plexiglass lantern slides, thirty-five mm slides as normally processed and worked by hand, and closed circuit television (which despite high interest in the past, was not utilized). Dependence on commercial processing and a rapid succession of due dates for presentation of projects may have been a factor working against those using the audiovisual media. In the past, and since the experimental class, only one topic or theme has been used as the basis for the design projects within the term. Though there were deadlines for projects within the term under this arrangement, it is the feeling of the instructor that the establishment of the four separate topics could well have been of consequence to those in the experimental group.

Despite many of these considerations, students working in the control group when allowed to utilize the audiovisual media performed very well. At the end of a term in which the work of the experimental group did not seem to exhibit any advantages for the use of the audiovisual materials, there was a positive response from the class to these materials. It should be apparent from the questionnaire that the audiovisual media received the most favorable comments regardless of the division of the class. Only in the case of a medium being the prime aid in developing a sense of design were the groupings strongly apparent. It is important to note that most of the students responding to question eight felt that no particular media should be utilized for the whole course. Comments for question ten show that most of the students desired a mixture of media. Only one student from the experimental group indicated a preference for not working in the other group. Three students from the control group showed an interest in being in the other group. Of those respondents from the control group answering in the affirmative to this question, one is known to have originally indicated preference for working with the experimental group.

In the basic design course completed this year, one set of design problems was presented to the students for development in audiovisual materials. Three other sets of problems calling for major solutions were developed in the regular media. One theme or topic was used by each student throughout the term. Minor problems were assigned to aid in dealing with each set of major projects. A grouping of several minor problems to be dealt with in regular materials was developed to lead up to the audiovisual project. On the basis of the above evaluation it was felt that students working with the normal design media could approach the audiovisual media on equal terms with those having worked with the audiovisual media for a similar period. However, it appeared that students could not make an equal shift from audiovisual materials to regular materials. Although there were no outside evaluations made of the second design class nor questionnaries taken, overall response to the audiovisual media appeared to the instructor quite high, and the quality of work done in these materials to be on the same level or better than the work done in the normal design materials.

This grant has enabled the Art Department to begin to develop a better approach to the use of the audiovisual materials in design instruction as well as the rest of the studio curriculum. Current planning by the department indicates continuing design instruction with the integration of the audiovisual media with the regular media and proposes a course in film making which may perhaps better serve students such as those represented by experimental group A1.

Summary of Expenses:	2 ½-hour videotapes	$ 89.90
	Student assistant	19.50
	Consultants (Evaluators)	225.00
	Preparation, tests & materials	100.00
	Photographic materials	47.58
	Misc. supplies	18.02
		$500.00

Questionnaire

1. Did one or another of the media employed in this course make a definite impression on you?

	Experimental Groups	A1	A2	Control	B1	B2
	yes	4	4		3	8
2. Which?	AV media	4	4			8
	usual media				2	
3. Favorable?	AV media	4	2		3	7
			1-unfavorable			

4. Do you feel any media was of primary help in devleoping a better sense of the elements of design

yes	3	2		3	7
no		1			1

5. Which? AV media	2	1			1
usual media	2	1		2	6

6. Which media most excited you?

AV media	4	3		3	2
usual media				3	
all media				2	

7. Did any of the media make you want to work more?

AV media	3	2		1	4
usual media		1		1	2

8. Could one set of media be used consistently through the whole course?

no	3	2		1	3
yes	1	1		1	2

9. Which?

AV media		1		1	2
usual media	1			1	2

10. (At the end of the term) Would you rather have been in the other group?

yes		no		prefer to alternate	
A	B	A	B	A	B
2	3	1	5	2	2

EVALUATION 1

Experimental

A 1 STUDENT	1	2	3	4
U	-	1	2	-
W	2	2	2	5
R	-	-	1	-
Y	-	2	2	-
X	-	4	5	3
T	4	3	4	2
A 2				
D	4	5	3	5
V	-	4	3	-
C	4	3	2	5
P	1	1	2	1
CONTROL B 1				
J	-	5	5	5
Q	1	1	1	3
E	4	3	3	5
G	2	1	1	1
N	2	2	1	2
B 2				
K	2	4	3	3
H	2	2	3	2
I	1	-	-	3
S	1	2	2	2
M	-	4	5	2
O	5	3	5	4
B	2	2	3	1
L	2	5	5	4
A	2	3	2	2

EVALUATION II

Experimental

A 1 STUDENT	1	2	3	4
U	-	2	1	-
W	2	4	4	2
R	-	-	2	3
Y	-	2	2	-
X	-	4	3	1
T	1	4	3	1
A 2				
D	2	3	2	2
V	-	4	4	2
C	5	2	1	1
P	3	3	3	3

CONTROL

B 1				
J	-	5	5	5
Q	2	2	2	3
E	1	4	1	4
G	4	1	3	4
N	5	2	3	4
B 2				
K	5	5	5	2
H	4	4	3	5
I	3	2	2	3
S	3	2	2	3
M	2	5	5	4
O	4	1	4	5
B	3	4	4	3
L	-	2	5	4
A	2	3	2	3

COMPOSITE I & II

A1	1	2	3	4		$\bar{y}$	Σy^2
U	0	1.5	1.5	0	3.0	.75	.56
W	2	3	3	3.5	11.5	2.88	8.29
R	0	0	1.5	1.5	3.0	.75	.56
Y	0	2	2	0	4.0	1.00	1.00
X	0	4	4	2	10.0	2.50	6.25
T	2.5	3.5	3.5	1.5	11.0	2.75	7.56
Σ	4.5	14.0	15.5	8.5	42.5	10.63	24.22
$\bar{Y}$	.75	2.33	2.58	1.42	10.63	1.77	

A2							
D	3.0	4	2.5	3.5	13.0	3.25	10.56
V	0	4	3.5	1	8.5	2.12	4.49
C	4.5	2.5	1.5	1.5	11.5	2.88	8.29
P	2	2	2.5	2	8.5	2.12	4.49
Σ	9.5	12.5	10.0	9.5	41.5	10.37	27.83
$\bar{Y}$	2.38	3.12	2.50	2.38	10.37	2.59	

B1							
J	0	5	5	5	15.0	3.75	14.06
Q	1.5	1.5	1.5	3	7.5	1.88	3.53
E	2.5	3.5	2	4.5	12.5	3.12	9.73
G	3	1	2	2.5	8.5	2.12	4.49
N	3.5	2	2	3	10.5	2.62	6.86
Σ	10.5	13.0	12.5	18.0	54.0	13.49	38.67
$\bar{Y}$	2.10	2.60	2.5	3.6	10.80	2.70	

B2

K	3.5	4.5	4	2.5	14.5	3.62	13.10
H	3	3	3	3.5	12.5	3.12	9.73
I	2	1	1	3	7.0	1.75	3.06
S	2	2	2	2.5	8.5	2.12	4.49
M	1	4.5	5	3	13.5	3.38	11.42
C	4.5	2	4.5	4.5	15.5	3.88	15.05
B	2.5	3	3.5	2	11.0	2.75	7.56
L	1	3.5	5	4	13.5	3.38	11.42
A	2	3	2	2.5	9.5	2.38	5.66
	21.5	26.5	30.0	27.5	105.5	26.38	81.49
	2.39	2.94	3.33	3.06	11.72	2.93	

A1 Mean 1.77
S.D. 1.04

A2 Mean 2.59
S.D. 0.57

B1 Mean 2.70
S.D 0.75

B2 Mean 2.93
S.D. 0.73

A1 vs. B2 t = -2.16 5% level
test t = -2.56 significant at 5% level 2-tailed

GRANT NUMBER XX

CORD GRANT
PROPOSAL

EFFECTIVE UTILIZATION OF SERVICES OF DATA PROCESSING, INSTITUTIONAL RESEARCH, AND OFFICE OF THE REGISTRAR FOR MORE EFFICIENT OPERATION OF THE SMALL LIBERAL ARTS COLLEGE

Submitted by

John E. Nichols, Registrar

Monmouth College

Monmouth, Illinois

November, 1968

The registrar must deal with problems concerning the faculty, administration and students -- his office is the crossroads of the college or university and his effectiveness as an administrator depends on how these situations and relationships are arranged. With the concept of institutional research and data processing becoming a more integral part of the college scene, the registrar in many cases must add two more hats to his ever-increasing wardrobe of responsibilities or at least he must become very familiar with these two new areas.

Registrars, as data managers should continually remind themselves that, for the most part, they have, through the registration process, the first and last real contacts with students, and the majority of contacts in between. We should use data processing, but use our managing ingenuity to keep the spirit of human relations alive and dynamic in our registration and sectioning processes.

The need for institutional data upon which far-reaching decisions are made is greater than ever today.

Do we want to do as much as we can to automate our system? We must, if we are to keep up with the trend and we must if we are expected to provide the personal service to our students and to provide the multitude of institutional data to our administrators and faculty.

Then how can we provide the most up-to-date, efficient system that will still fit within the budget of the small liberal arts college and still allow us to provide the student with personal attention?

Much has been written on how the large college or university coordinates the registrar's duties with those of data processing and institutional research. However, the small college must modify greatly these large sophisticated systems.

The purpose of this grant is to study the various procedures carried out by other small colleges and to determine what is best for Monmouth College after careful study of our findings. In addition this study will establish the various criteria for doing an in-depth cost analysis study of the various functions relating to the office of the registrar.

The funds will be used to send out questionnaires to a selected group of small colleges having the same characteristics as those of Monmouth College. This questionnaire will ask for information about equipment, procedures, working relationships, and other pertinent information relating to the objectives of the grant.

In addition to the above, consultants will be called in to study our system and to make recommendations.

The initiator believes this CORD Grant study can be valuable to other liberal arts colleges, since comparative studies can be tested to show whether or not an improvement was effected.

Too often committee findings and recommendations are made after a group of registrars have met in a committee situation and then published their minutes.

A report of the results will be sent to the ACM schools, schools receiving questionnaires, and to the Journal of the American Association of Collegiate Registrars and Admissions Officers.

Our objective is to come up with the most efficient, inexpensive system effectively relating data processing and institutional research with the functions of the office of the registrar.

BUDGET

Consultant Fees	$200.00
Secretarial Help (60 hours @ $2.00 per hour)	120.00
Supplies: (Stationary, postage, etc.)	80.00
Travel (For visitations to other schools, data machine shows, etc.)	100.00
TOTAL BUDGET	$500.00

GRANT NUMBER XX

FINAL REPORT

EFFECTIVE UTILIZATION OF SERVICES OF DATA PROCESSING, INSTITUTIONAL RESEARCH, AND OFFICE OF THE REGISTRAR FOR MORE EFFICIENT OPERATION OF THE SMALL LIBERAL ARTS COLLEGE

Submitted by

John E. Nichols, Registrar

Monmouth College

TO: Cord Grant Committee

FROM: John E. Nichols, Registrar, Monmouth College

SUBJECT: Report of Progress on Seed Grant #05933-06 Approved February 12, 1969

It was the intention of this writer to have the study completed by the opening of school last year. However, due to several personal family problems, the project was delayed and as of this writing is not complete.

A questionnaire was to be sent to approximately 250 small liberal arts colleges throughout the United States, asking questions relating to the relationship of Data Processing, Institution Research and the Registrar's office.

The results of this questionnaire would have been reported along with this writer's conclusions.

While attending two state and two National Registrars' Conventions, conversations were held with 25-60 Registrars about this relationship and almost exclusively the point of conversation fell on the subject of Institutional Research.

The conclusions drawn from these conversations are:

1. Most small liberal arts colleges do not have a separate person in charge of Institutional Research. In many cases the Registrar is also in charge of Data Processing and Institutional Research.
2. Institutional Research is not research in the true sense of the word. A more appropriate description would be collection of Institutional Data.

It would seem then that in the small liberal arts colleges, the Registrar who wears all three hats is responsible for collecting more data than those who have a Director of Data Processing and Director of Institutional Research to work with.

All three collect data which is the responsibility of the Registrar 's office and nine times out of ten originates from the Registrar's office regardless of who has the responsibility of collecting certain data.

This writer believes that the questionnaire would have backed these conclusions and that a final recommendation could have been made regarding the titles and their relationships.

The questionnaire will be mailed and final conclusions will be drawn, although the results will not be back by September 15.

John E. Nichols

* * * *

A halt was called to government support of this project on September 9, 1970. Funds ($258.77) not spent by this date are being recalled.

Cord Grant

Budget Report

Received February 12, 1969		$500.00
Expenses:		
Supplies	$24.37	
Secretarial Help	12.50	
Postage	15.00	
Travel	189.36	
Total expenses		241.23
Balance, September 9, 1970		$258.77

John E Nichols

John E. Nichols
Registrar
Monmouth College
Monmouth, Illinois

GRANT NUMBER XXI

SEED GRANT PROPOSAL

DEVELOPMENT OF VIDEO TAPES FOR USE IN INTRODUCTORY GEOLOGY

Donald Wills

Monmouth College
Monmouth, Illinois

June, 1968

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DEVELOPMENT OF VIDEO TAPES FOR USE IN INTRODUCTORY GEOLOGY

I Introduction

Problem

The elementary geologic truths are best discovered where the geology is - in the field! Unfortunately, it is not always practical or possible to take students outside the classroom, particularly at the introductory level where a hundred or more students may be in a class. If one cannot take the students to the field, the next best thing is to bring the field to the students. This suggestion is neither new nor novel. Many films, film strips, and slides have been produced to accomplish just this task. Some of these films give a fine assist to teaching but many more are quite poor. Utilization of available films presents several problems. First, it is practically impossible to purchase many of the desirable films because of cost; therefore they must be rented. This means that films presented in the classroom are shown once, never to be seen again. Another real problem is securing these materials at the desired time. Delays, conflicts, etc., result in films being shown before or after the topic has been covered in lecture. This greatly diminishes the value of the material because of the lack of continuity. Another drawback of commercial films is that they are made for a wide audience and the topics are often too general to serve as a good supplement to the needs of the individual teacher. Although films or other

visual aids can never replace reality, they can bring to the classroom a sequence of events and an observational approach which convincingly develop some of the main principles and concepts of geology. A point which must be emphasized is that the pictures themselves are often more meaningful and represent the ideas better than the accompanying words. The words, then, are more effective and enriching when related visually.

The problem, then, resolves itself into four parts:

1) Bringing field information to the classroom
2) Making this information available as a teaching aid outside the classroom
3) Designing materials which can be used independently by the student
4) Creating films which are adaptable to existing courses and to integrate this material into the course syllabus.

Review of Literature

Very little has been written and published on this subject, however the following articles and books are cited as relevant literature:

1) Maher, Lewis J. (1968) Geology Education by Light Plane, AOPA Pilot, January
2) Shelton, John S. (1966) Geology Illustrated, W. H. Freeman & Co.

Objectives

There are two specific goals to be achieved in this kind of project:

1) To upgrade the quality of the introductory geology course by giving to the geology major a broader foundation for more advanced courses. It will bring to the general student a more meaningful experience from visual illustrations rather than textbook examples.
2) Instead of the educational experience being a one-stand lecture to be observed only at a specific time, this material will be available through the use of video tapes whenever the student desires to review it.

The testable goals would be to measure quantitatively the performance of the students in this experimental course against students taking the more traditional course. This could be accomplished at Monmouth College by teaching two classes in the same course and covering similar material but excluding the new visual aids and video taping from the control class. Knox College, through the courtesy of Professor Larry DeMott, Chairman of the Geology Department, has agreed to permit one of his classes to serve as another control. Through the use of these comparative studies it may be possible to determine the most effective method of presenting geological information.

II Procedure

Design

The registration in Geology 101-102 for the 1968-69 academic year will be on a free choice basis in two classes. This will give a random sampling of freshmen students. One class will be experimental and one a control class. In addition, one class at Knox College will also serve as a control. The control classes will utilize traditional methods of presentation of information; the experimental class will place emphasis upon use of visual aids and video tapes.

Sampling

The population sampled will be primarily non-major students from the freshman class.

Measurement and Analysis

During the course of the term four written tests will be administered to both classes, and will be the same test. Evaluation will attempt to determine the most effective manner of presenting geological information. The sample means of class scores will be compared by t-test to determine if there is a significance difference in the population means due to the use of visual aids and video tape replays.

III Product and Use

In order to solve the problem, it is proposed that a series of slides and films be made that can be incorporated into the introductory geology course. The primary thrust for the development of this series will be to integrate lecture materials with the film. It is highly desirable that these films be made personally, in order that the illustrations be directly related to the material covered in lecture. Students will see actual examples rather than make do with verbal descriptions.

The development of the course syllabus will emphasize field relationships to illustrate the various geological concepts. By approaching the subject in this manner, the student will be able to observe and form his own ideas about the topic under consideration. The format of this project will be to incorporate films and lectures on video tapes. These tapes will be placed in the audio-visual library to be available for viewing by the students at their convenience.

In summary, the problem of bringing field information to the classroom is solved through the utilization of movies and slides taken by the instructor and integrated into the lecture material.

The second problem of having information available on a continuing basis is solved by the use of video tape materials. An introductory geology course presented in this manner will be a more realistic, live experience than the ordinary textbook course.

IV Personnel and Facilities

The study will be conducted by Donald L. Wills, Chairman, Department of Geology, in collaboration with Glenn C. Merrill, Assistant Professor of Geology, Monmouth College, and Larry DeMott, Chairman, Department of Geology, Knox College.

Messrs. Wills and DeMott have been involved in geology teaching for a total of 30 years. Mr. Merrill is joining the Monmouth College staff in the fall of 1968, and has two years of teaching experience.

The facilities available are the video equipment and camera from the Audio-Visual Department at Monmouth College; rental aircraft from Skypark, Inc. of Monmouth, Illinois; personal airplane of Mr. Wills; laboratory facilities of Geology Department, Monmouth and Knox College.

Since the study will be conducted by Professor Wills, the following is a resumé of his background and experience.

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ACADEMIC BACKGROUND

Institution	Major	Degree	Dates
University of Illinois Urbana, Illinois	Geology	B.S.	1949
University of Illinois Urbana, Illinois	Geology & Geography	M.S.	1951
University of Iowa Iowa City, Iowa	Geology & Educational Administration in Higher Education	Ph.D.	Pending thesis completion

Ph.D. Thesis: Regional Geology of Selected Areas of North America

Scholastic Honors, Fellowships, etc.:

Teaching Assistantships, University of Illinois and Iowa.
National Science Faculty Fellowship 1962-64

EXPERIENCE

Position	Employer	Location	Dates
Geophysist	Tulsa Exploration Co.	Tulsa, Oklahoma	8/49-2/50
Geologist	U.S. Geological Survey	Washington, D.C.	2/51-10/51
Asst. Prof. & Head Dept. of Geology	Monmouth College	Monmouth, Ill.	10/51-6/62
Student (N.S.F. Faculty Fellow)	University of Iowa	Iowa City, Ia.	6/62-10/64
Assoc. Prof. & Head Dept. of Geology	Monmouth College	Monmouth, Ill.	10/64-present

Publications:

Wills, D. L., with Palmquist, J. C. and Ray, C. E., Fossil Muxk-Ox (Ovibos) from the Illinoian Till of Henderson County, Illinois. (Being submitted for publication in Transactions of Illinois Academy of Science).

_____, Conodont Assemblages from the Chester Shales of Montant and North Dakota. (Being submitted for publication in The Journal of Paleontology).

_____, and Tuttle, S. D., Regional Geology of Selected Areas of North America. (McGraw-Hill has expressed an interest in publishing this text.)

Participant in N.S.F. Conferences; Geology of Western Montana; Problems in Teaching Earth Science.

V Budget[1]

Video tapes (4) @ $60.00/tape (A)	$200.00
Film (20) 8 mm super @ $4.80/roll developed	96.00
Film (10) 35mm @ $3.00/roll developed	30.00
Flying time @ $20.00/hour	174.00
	$500.00

1. Additional money will be requested from the Monmouth College Faculty Development Fund to underwrite more tape, film, and flying time.

GRANT NUMBER XXI

FINAL REPORT

DEVELOPMENT OF VIDEO TAPES FOR USE IN INTRODUCTORY GEOLOGY

Donald Wills

Report by
James H. McAllister

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MONMOUTH • ILLINOIS 61462
TELEPHONE: 309•734-3161

MONMOUTH COLLEGE
FOUNDED • 1853

Office of Institutional Research

8 September 1970

Dr. George L. Melville, Director
Institutional Research
Knox College
Galesburg, Illinois 61401

Dear George:

Reference is made to the seed grant awarded to Professor Donald Wills, Geology, for the "Development of Video Tapes For Use in Introductory Geology".

There is inclosed an expense report accounting for $300 of CORD money dated 15 July 1968 (substantiating documents were filed with the Business Office).

All film exposed by the 16 mm movie camera was ruined--apparently due to a defective shutter mechanism and the project failed completely. Some still shots are being used in the classroom, but no other material could be salvaged. A rough copy of the narrative of the trip which Mr. Wills made on the tape recorded was submitted. This would have been utilized in the preparation of the video tapes, but now is of no value.

It is indeed unfortunate that such a mishap could ruin what would have been an excellent project.

Very truly yours,

James H. McAllister

James H. McAllister, Director
Office of Institutional Research

Incl.

File

MONMOUTH COLLEGE

MONMOUTH, ILLINOIS 61462, TELEPHONE (309) 734-3161

DEPARTMENT OF GEOLOGY

July 15, 1968

TRAVEL EXPENSES FOR CORD GRANT AND FACULTY DEVELOPMENT FUND.

ADVANCES:

CORD GRANT	$300.00
Faculty Development	500.00
	$800.00

Expenses

Transportation			
Personal car - 4200 miles @ .08¢ per mile.		$336.00	
Plane		79.81	
		$415.81	
			$415.81
Motels			158.08
Meals	14 days @ 6$5.00 per day		70.00
Film			133.00
Miscellaneous			23.11
			$800.00

Lewell

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GRANT NUMBER XXII

THE FRANKLIN STUDENT - A DEMOGRAPHIC STUDY OF THE STUDENT POPULATION OF FRANKLIN COLLEGE OF INDIANA 1969 - 1970

BY

BEN R. DOTSON

AN INSTITUTIONAL RESEARCH PROPOSAL
Submitted to
Dr. Paul T. Nugent

December, 1969

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I. INTRODUCTION

If past records hold true, there will be a 40 per cent turn-over of new students entering colleges and universities this year. Almost half will not graduate. Fortunately, new research is uncovering better methods of selecting students, which may result in lessening the high attrition rate.

During the past two decades, there has been an increased interest in research related to the college student. As a result the present generation of college students has been studied and analyzed more extensively than any other group.

The need to learn more about college students and their environments is being compounded annually by a tremendously escalating enrollment. The number of college students has risen from slightly over 200,000 at the beginning of the 20th century to more than 7,000,000 for the fall term of 1969. Half of this increase occurred during the last decade. An even greater increase is projected for the next 10 years.

This enrollment increase, the shortage of trained personnel, and inadequate and crowded physical facilities make it necessary for institutions to find better and more economical ways of educating these students. Yet instructional space and financial support remain at a premium, and soeiety expects and demands continuing quality instruction. The problem has caused institutions

to look hopefully at new methods and criteria for selecting students.

Slightly more than half of the students involved in the 40 per cent national attrition rate drop out during their freshman year. Admissions personnel feel if it were possible to more accurately predict "what kind of person is likely to succeed in what kind of college", they would find a solution to their problem and be able to save much in terms of human and financial resources.

Most of the early research related to the college student was devoted to methods and criteria directed at predicting academic success. This research failed to take into consideration the effects of numerous demographic attitudinal, and environmental factors. Since the attrition rate remained relatively constant, a need for more accurate methods of predicting success continued to remain foremost in the minds of most admission officials. Thus, a long search was launched for this "utopian" method which has only recently begun to broaden its scope to take into consideration the relation of the student to his total environment.

II. Statement of the Problem

The Franklin Student - A Demographic Study of the Student Population of Franklin College of Indiana - 1969-1970.

The purpose of this study would be to provide a closer look at the student population of Franklin College of Indiana so that a better understanding of these students and their campus culture might be obtained. It is felt that if this endeavor is successful, an insight will be gained into many student problems and needs will be found where they originated - with the students in their culture.

A demographic multiple choice questionnaire will be designed consisting of items related to personal data, family background, high school experiences, academic performance, campus life, vocational and educational plans, as well as items related to the students' use and evaluation of certain student personnel services available on the Franklin College campus.

The questionnaire will be administered to all students who enrolled on the Franklin College campus during the 1969-70 Spring Semester. The data to be supplied by these students will be punched into IBM processing cards which will be subjected to relevant analysis.

III. Methods and Procedures

Instrumentation. A questionnaire will be developed and employed to gather the data to be used in this study. It will be constructed to obtain information related to: (1) the student's family and educational background, (2) pertinent socio-economic information, (3) educational and vocational plans, aspirations and goals of the students, (4) the extent of the student's participation in campus activities, and (5) his use of selected student personnel services available on the Franklin College campus.

The questionnaire is to be constructed from instruments used in similar demographic studies and from suggestions made from faculty members, student personnel workers, and selected members of the student body.

After a study of the research methods used in similar demographic studies which used larger samples, the writer concluded that a multiple choice questionnaire would be the most feasible instrument to gain information desired for this type of study. Each question will have a minimum of two alternatives; however, the majority of the questions will have five possible alternatives.

In an effort to check the validity, appropriateness, and clarity of the statements, the instrument will be administered

to a selected group which is generally representative of the population to be studied. Upon completion of the instrument, the respondents will be interviewed personally by the writer to determine if there is a reasonable degree of reliability between the instrument and the results of the interviews. Those factors which seemed to be unreasonable, unreliable or ambiguous will be revised.

Selection of the sample. The sample used in this study will be limited to the student population of Franklin College in 1969-1970. The return on the questionnaire would approach 100 per cent.

Analysis of the data. The participants will be asked to mark their answers on IBM machine scoreable answer sheets. The completed answer sheets will be examined by the writer and those items which a student enters more than once will be corrected by erasing all responses. Data from the correct answer sheets will be punched by an optical scanner into IBM data cards for processing. All possible answers for each item on the instrument will be tabulated and percentages will be claculated for each individual item on the questionnaire. In order to obtain a valid per cent, the divisor used for calculation purposes will be the number of valid responses for that particular item.

Limitations. The scope of this study will effectively be limited by the fact that the data gathered will be restricted to: (1) data gathered from as many as possible of the students enrolled at Franklin College for the 1969-1970 academic year and who are

registered as students at the time of the administration of the instrument; (2) despite the efforts of this writer to construct a completely valid instrument which would effectively measure that for which it will be designed, it is recognized that the request for honesty of responses under the guarantee of anonymity does not give complete assurance that all answers will, in fact, be honest and reliable; (3) opinions, attitudes, and plans reported by this study will be those expressed by the students at the time of this research.

IV. Definition of Terms

Dormitory Resident. Any student who resides in a dormitory which is operated by Franklin College of Indiana.

GPA. A student's grade point average for the previous semester.

Independent. A student who is not a member of pledge of a campus fraternity or sorority.

Institution of Higher Education. Those institutions designed to offer formal education beyond the high school at the college or university level.

Instructors. All professional persons employed by Franklin College whose primary function is that of providing actual classroom instructional aid to those enrolled as students at Franklin College

Off Campus Housing Resident. Any student who does not reside in a fraternity house, private home owned by relatives, or in a housing facility operated by Franklin College.

Subgroup. A smaller group contained within the total student body of Franklin College which is characterized in such a manner that it may be defined as distinct.

December 19, 1969

MEMORANDUM

To: Dr. Paul Nugent

From: Dean Dotson

Re: Proposed Institutional Research Project

Attached is a list of what I believe to be the lowest minimum figure for my proposed Institutional Research project. My proposal is also being reviewed by Dr. Haines. The final results of the study will be ready for your final approval and be multilithed, ready for presentation to our April Board of Trustees meeting.

1.	Estimated cost of IBM answer sheets to be administered as soon as possible after February 7, 1970.	$ 30.00
2.	Estimated cost of printing questionnaire and final copy of results.	100.00
3.	Estimated cost of typing questionnaire and final results on multilith stencils.	100.00
4.	Data processing.	100.00
	Total	$ 330.00
	plus 10% as a margin of error.	30.00
	Final total cost	$ 360.00

GRANT NUMBER XXII

FINAL REPORT

A DEMOGRAPHIC STUDY OF FRANKLIN COLLEGE STUDENTS

Submitted by

Dr. Ben Dotson
Dr. Paul Nugent

Franklin College
Franklin, Indiana

September 8, 1970

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FRANKLIN COLLEGE
Franklin, Indiana
September 4, 1970

REVIEW OF THE PURPOSE OF THE STUDY

This study as originally proposed was to obtain a profile of the Franklin College student. It was hoped that the return on the questionnaire would be near 100 per cent. After the fact, it was found that only about 50 per cent responded. This necessitated some type of check on the representativeness of the sample, which is the first item covered.

While the entire questionnaire does give many aspects of the student population certain of these are related to the data supplied by the Office of Research of the American Council on Education.(1) An added discussion from the original proposal is the comparison of Franklin College to the National Sample in certain areas. This does in some cases give hints to differences between the Franklin population and the national student population.

With 80 questions, it would be easy to become bogged down in certain areas if the report simply attempted to look at all responses. In order to simplify the student profile, several areas were chosen and questions related to this were used in order to obtain data for discussion in these areas.

TEST OF THE DATA FOR DETERMINATION OF THE ADEQUACY OF THE SAMPLE

The first two factors considered to test the data were sex and religious affiliation.

(1) Office of Research, American Council on Education. "National Norms for Entering College Freshmen" Washington, 1969

The results of the two are in the following tables:

1. Sex

	Men	Women
Sample	209 (141)	123
College	524	250

2. Religious Affiliate

	Sample	College
R. Catholic	61	131
Baptist	75	120
Methodist	42	107
Presbyterian	36	94
Other	123	334

These results would indicate that the group returning the response sheets was representative of the student body. These two items would not seem to be directly related to the student responses, and thus would be a fair general test. To further test the sample, residence on or off campus and residence of parents was considered. These two items were tested since they seemed more directly related to some of the responses, the former in terms of student participation, and the latter in terms of student satisfaction.

The results were as follows:

Housing Status

	On	Off
College	490	296
Sample	262	75

Place of Residence of Parents

	Indiana	Other
College	365	421
Sample	145	192

Thus it appears that there is some question that off campus residence were adequately represented, but that the geographic distribution of the sample was reasonable. Thus responses relating to on campus activities may be more favorable than they might be if the off-campus students were included.

RELATION TO THE NATIONAL NORMS

Type of School

	Public	Private Church	Private	Other
National	83.6	12.5	3.2	.7
Franklin	85	5.9	6.5	1.1

It appears that Franklin College has a student population much like that of the entering students over the entire nation, with perhaps one exception that would seem surprising on the surface. The number of students from private church related high schools is smaller than the national average. Given that Franklin's church relation is with a denomination that does not have private secondary schools, this becomes less surprising. A further aspect to study here, would be to determine the make up of the student population from sub groups that do have parochial or church related schools to determine if Franklin's group comes from those students in this group that go to secondary schools that are non-church related.

Highest degree expected

	Less than AB	AB	MA	Doctorate
National	10.7	38.2	32.9	17.2
Franklin College	6	40	42	9

The results of this question would indicate that Franklin College has a population that expects to achieve more Masters degrees than the national group, but less doctorates. This discovery has some significance for the college, and would agree with observed data. Since many students are in the area of education at the elementary and secondary level and since the requirements in these areas are often for a Masters degree, it is reasonable that the students would have more than

the usual number of Masters degree persons. The reduced number expecting a Doctorate is perhaps even more important. This would suggest that our program should provide for students who do not expect to become as deeply involved in their area as a pre-doctoral program would imply.

Place the student grew up.

	Rural	Small Town	City	Large City
National	9.7	21.4	34.7	34.2
Franklin College	15.	10.	15.	60.

The results of this section, would indicate that Franklin has a larger number of students coming from the large city than is the case in the national population. This should be carefully considered, inasmuch as many recruiting efforts have emphasized working the large city market of students. If the population mix at Franklin is not satisfactory, the admission effort should consider the advisability of the continuation of efforts in the directions of large cities. If on the other hand the present population is satisfactory then admissions procedures do seem to be working quite well and the extra effort in the large city has paid off well.

Source of financial support

	Parent	Personal	Loan & Grant
National	49.2	29.3	30.9
Franklin College	57.5	15.3	26.9

These results would show the Franklin student more dependent on parents than the national group. This data may reflect in part the moderately high tuition of Franklin, particularily compared to the public university. One might well ask if it is possible with the cost level of Franklin for many students to support themselves. A second point that should be considered is the possibility of raising the level of Financial aid, since the number supporting themselves by loans and grants is less than the national level.

It should be noted in the above that responses in either the National Norms information or in the Franklin response sheet had to be grouped to obtain comparable data. While this may give some distortion, it would appear that after the fact of the questionnaire, this was the only way to compare the data.

PROFILE OF FRANKLIN COLLEGE

Satisfaction of students with college

One of the points of general interest in the questionnaire is the collection of question related to student satisfaction

Three questions seemed to be most directly related to this. The first two dealt with the students decision to attend Franklin College and the third was a measure of the validity of this question, namely did the stu dent intend to return to Franklin College. The final question in this group deals with the attitude change of the students attitude toward the college.

Question 25 - How do you feel about your decision to attend Franklin College?

Response	Per Cent
Very happy and satisfied	15%
Fairly well pleased	44%
Slightly unhappy	22%
Very Unhappy	12%
Undecided	7%

Question 26 - If you were a high school senior planning to enter college in September 1970 but with your present knowledge of Franklin College would you

Response	Per Cent
Definitely enter Franklin	23
Need more information to make a decision	28
Definitely not enter Franklin	41
Enter another college but perhaps transfer to Franklin later	2
Not attend college	5

The results of these first two questions would show that Franklin College students are satisfied with Franklin in the small majority, and this group only moderately satisfied.

The results of the second question are perhaps more telling of the lack of depth in satisfaction, with 28% feeling that they would obtain more information before entering Franklin. The second point that can be observed from the second question is the large per cent that feel that they would not enter Franklin if they were to be making this decision this year instead of last. The 32% that say that they will not return to Franklin next year indicate a degree of depth to the dissatisfaction. The results from question 77 are consistent with these results, many more students feel that an unfavorable change in attitude has taken place than have had a favorable attitude.

Question 31 - Next year will you return to Franklin College?

Response	Per Cent
Certainly	40
Probably	25
Certainly not	32
Undecided	3

Question 77 - Has your attitude toward Franklin College changed since you enrolled here?

Response	Per Cent
No change	27
Yes, like it better	29
Yes, like it less	42

The overall results of the attitude sections suggest a problem of some magnitude. While there is not evidence in this study that students in other colleges do not have similar reactions this is not comforting to a college which wishes its relations with students to be one of its strong points. Rather than making students feel that the college is at least what they expected, we are making them less satisfied. Indeed potential problems in terms of student disorder or in terms

of students leaving the college are red flagged in this portion of the results.

CONCEPT OF THE COLLEGE AND FACULTY

In attempting to find the sources of the above dissatisfaction the students concept of the teachers was tested. The first item was students feeling about faculty emphasis on teaching

Question 44 - Do you think professors are placing more emphasis on research than on teaching?

Response	Per Cent
Yes	14
No	47
Equal	12
Undecided	24

These results would seem to indicate that students are not feeling neglected in favor of research. While comforting, Franklin's general approach has been to give very limited encouragement to research and the students attitude is certainly very much in line with reality.

Question 45 - How do you react to the statement "Few instructors take genuine interest in my personal welfare".

Response	Per Cent
Strongly agree	11
Agree	37
Disagree	41
Strongly Disagree	9

The results from this question suggest one of the problems that may cause some of the student dissatisfaction. While Franklin states in its literature that it is a friendly, small college, it would seem that students are not finding a relationship with their professors that they feel is personal. Although part of the results might be due to a misunderstanding of the question, due to its negative working, the agreement of the percentages here with those of previous dissatisfaction suggest that these results have some reasonable degree of accuracy.

The next five questions relate to the students reaction to test and their opinions regarding cheating on test, both with regard to their own cheating and with regard to their opinion of others cheating.

Question 36 - How well do you feel tests administered at Franklin College measure knowledge of specific subjects?

Question 37 - How well do you feel tests administered at Franklin College measure broad comprehensive knowledge?

Response	Percent #36	Percent #37
Very well	11	8
Fairly well	57	50
Poorly	21	29
Undecided	9	10

These results suggest that the students are not overly dissatisfied with testing, although they feel it is slightly more directed towards specific knowledge than towards general knowledge.

Question 40 - While attending college have you ever copied on an examination?

Question 41 - While attending high school did you ever copy on examinations?

Response	Percent #40	Percent #41
No	65	43
Once	8	9
More than once but not often	22	0
Fairly frequently	3	46

The results from this section would indicate, if they are believed accurate that students cheat less on college exams at Franklin than these same students cheated in high school. Indeed the amount of serious cheating would seem to be very small in terms of the number of students who cheat frequently.

Question 42 - What percent of the students in your class do you feel cheat on an examination.

Response	Percent
Less than 10%	42
10%-25%	23
25%-50%	13
More than 50%	5

The results from this question would seem to be in agreement with the results of question 40. The students would seem to feel that only a small percentage of students cheat on a test. This result would seem encouraging, and an indication that in the area of developing the importance of integrity to scholarship we have succeeded.

Students concept of course work and time devoted to studying.

The next two questions relate to how students feel about the level of difficulty and their reaction to the difficulty in terms of study.

Question 48 - Do you feel that your classes at Franklin College are taught primarily on the level of

Response	Percent
a. Slower students	4
b. Average students	54
c. Better students	36
d. Superior students	3

The results of this question would seem to be in line with the general evaluation of the college, by faculty and staff. While some persons might feel that the college should address its work level to the better students, at least a large minority feel this is already the case. The fact that only 4% feel that work is at the level of the slow students is encouraging.

Question 79 - How many hours a week do you devote to studying?

Response	Percent
a. Less than 6	17
b. 6 to 10	22
c. 11 to 20	36
d. 21 to 30	18

The result from this question are somewhat less comforting. Given that we do not have all superior students, it would seem that the percentage of students approaching the 32 hours of study outside of class is rather small. Whatever the level of classroom discussion, the amount of work obtained from the student seems to be less than the rule of thumb amount of whether or not the lack of work is caused

by or results from student dissatisfaction would seem a topic worth pursuing.

SOCIAL LIFE OF STUDENTS

Turning from the academic side of life to the social side the next four questions deal with social and recreational study of the student body.

Question 59 - Since coming to Franklin College have you experienced any trouble in getting dates?

Response	Percent
a. Yes, considerably	21
b. Yes, some	22
c. No	33
d. Don't know, haven't time	22

Question 60 - How frequently do you date?

Response	Percent
a. Less than once a month	19
b. Once or twice a month	19
c. Once a week	12
d. More often than once a week	28
e. Do not date (or blank)	23

These results would seem to indicate that some students are dissatisfied with dating and that they are justified in terms of their actual dating experience. As a further study of this problem, the followup studies will divide this group into men and women for a determination of the relation of this problem to the imbalance of men and women.

Question 61 - Which of the following extra curricular activities do you participate in most frequently?

Response	Percent
a. Lectures, concerts etc.	32
b. Student government	6
c. Social organization	0
d. Professional or scholastic	33

Question 62 - Which of the following extra curricular activities do you participate in most frequently?

Response	Percent
a. Athletic events	14
b. Informal athletics	13
c. Movies	31
d. Television	13
e. Social events	

These results would suggest that certain activities are most popular. However, one cannot tell from these results if the students would prefer other activities. The somewhat limited popularity of athletic events may be a reflection of the growing number of students who are more interested in community and social issues over the typical college live.

Question 65 - How would you classify most of your problems?

Response	Percent
a. Social	12
b. Personal	47
c. Academis	12
d. Financial	18
e. Other	11

The results of this question are interesting to note in relation to the dissatisfaction of the students. It would seem to indicate that some of the problem is related to the students themselves even though they may project this to the college.

SUMMARY

While many other questions are of interest to particular persons the ones covered above seem to cover most of the areas that are of general concern. In considering the overall results of this study, one can in retrospect see ideas that could have been included and some that could be eliminated, however, this is typical of any large scope study. Further analysis on this data will be done in terms of determining

the relationship of certain factors. In considering the possible extension of this type of study to a larger group, one is faced with the fact that this has in some sense been done with national studies. However a study of the relationship of student demography to type of college and other factors for small colleges might be a project of some worth.

ORIGINAL QUESTIONNAIRE

1. What is your sex?
   (a) Female
   (b) Male

2. What was your age at your last birthday?
   (a) 17 or less
   (b) 18
   (c) 19
   (d) 20
   (e) 21 or over

3. What is your married status?
   (a) Married, with children
   (b) Married, no children
   (c) Single

4. Last semester what was your grade point average?
   (a) Less than 1.0
   (b) Between 1.00 and 1.99
   (c) Between 2.00 and 2.99
   (d) Between 3.00 and 4.00

5. With which religious group are you affiliated?
   (a) Roman Catholic
   (b) Baptist
   (c) Methodist
   (d) Presbyterian
   (e) Other

6. How frequently do you attend church? (Now)
   (a) Not at all
   (b) Less than once a month
   (c) Once or twice a month
   (d) Once a week
   (e) More than once a week

7. How frequently did you attend church when you were in high school?
   (a) Not at all
   (b) Less than once a month
   (c) Once or twice a month
   (d) Once a week
   (e) More than once a week

8. Which item below pertains to your father's education?
   (a) Attended elementary school but did not attend high school
   (b) Attneded high school but didn't graduate
   (c) Graduated from high school but didn't attend college
   (d) Attended college
   (e) Don't know

9. If your father attended college, which item is appropriate?
   (a) Attended college but didn't graduate
   (b) Graduated from college but did not do post-graduate work
   (c) Did some post-graduate work but no degree was received
   (d) Received one or more post-graduate degrees
   (e) Don't know

10. Which item below pertains to your mother's education?
    (a) Attended elementary school but not high school
    (b) Attended high school but didn't attend college
    (c) Graduated from high school but didn't attend college
    (d) Attended college
    (e) Don't know

11. If your mother attended college, which item is appropriate.
    (a) Attended college but didn't graduate
    (b) Graduated from college but did not do post-graduate work
    (c) Did some post-graduate work bur no degree was awarded.
    (d) Received one or more post-graduate degree
    (e) Don't know

12. Approximately what was your family's income for last year?
    (a) Less than $3,000
    (b) Between $3,000 and $4,999
    (c) Between $5,000 and $9,999
    (d) Between $10,000 and $25,000
    (e) Over $25,000

13. How many brothers and sisters do you have older than you?
    (a) One
    (b) Two
    (c) Three
    (d) Four or more
    (e) None

14. How many brothers and sisters do you have younger than you?
    (a) One
    (b) Two
    (c) Three
    (d) Four or more
    (e) None

15. Has a member of your family previously attended Franklin College.
    (a) None
    (b) One parent
    (c) Both parents
    (d) A brother or sister
    (e) A grandparent or other close relative

16. What were your parents' expectations regarding your attending college?
    (a) It was naturally assumed that all children in the family would go to college.
    (b) They encouraged the children who wanted to go, but didn't assume that all would go
    (c) It was not expected that any of the children in the family would go to college

17. Do your parents or guardian reside in?
    (a) Indiana
    (b) Another midwestern state
    (c) Some other section of the U.S.A.
    (d) In a foreign country
    (e) Abroad-employed by the U.S. Govt. or in Military Service

18. While attending high school did you live:
    (a) On a farm or rural area
    (b) In a town with a population of less than 2,500
    (c) In a city with a population between 2,500 and 9,999
    (d) In a city with a population between 10,000 and 49,999
    (e) In a city with a population in excess of 50,000 /3D

19. From what type of high school did you graduate?
    (a) Private but not church related
    (b) Church related
    (c) Public
    (d) Other

20. In what year did you graduate from high school?
    (a) 1969
    (b) 1968
    (c) 1967
    (d) 1966
    (e) 1965 or before

21. What was the size of the student enrollment of the high school from which you graduated? (Grades 9-12 only)
    (a) Less than 100 students
    (b) Between 100 and 199 students
    (c) Between 200 and 499 students
    (d) Between 500 and 999 students
    (e) 1,000 students or over

22. How would you evaluate your high school in terms of preparing you for college?
    (a) Very adequate
    (b) Fairly adequate
    (c) Not very adequate
    (d) Very inadequate
    (e) Undecided

23. What was your initial contact with Franklin College
    (a) High school counselor
    (b) College publications
    (c) Franklin Alumni, relative or friend
    (d) High school visitation or College admissions center
    (e) Other

24. What was the major factor which caused you to select Franklin College as the place to continue your education?
    (a) Cost
    (b) Location
    (c) Academic factors
    (d) Influence of family or friends
    (e) Other factors

25. How do you feel about your decision to attend Franklin College?
    (a) Very happy and satisfied
    (b) Fairly well pleased
    (c) Slightly unhappy
    (d) Very unhappy
    (e) Undecided

26. If you were a high school senior planning to enter college in September 1970, but with your present knowledge of Franklin College would you:
(a) Definitely enter Franklin
(b) Need more information to make a decision
(c) Definitely not enter Franklin but some other college
(d) Enter another college and perhaps later transfer to Franklin
(e) Not attend college

27. Should you have had more information about Junior College Programs last year would you have:
(a) Considered entering a Junior College
(b) Definitely entered a Junior College
(c) Probably entered Franklin directly from high school
(d) Definitely entered Franklin
(e) Undecided

28. How much have your educational goals and aspirations changed since you entered Franklin College?
(a) Not any
(b) Slightly
(c) Considerably
(d) Completely

29. Do you expect to complete your college education with:
(a) Less than four years of college
(b) A Bachelor's degree
(c) A Master's degree or a professional degree (D.M., M.D., L.L.B., etc.)
(d) Doctorate (Ph.D., Ed.D., etc.)

30. Which of the following goals of education do you consider most important?
(a) Developing knowledge and interest in community and world problems.
(b) Developing an ability to get along with different kinds of people
(c) Training for a specific vocation
(d) Providing a basic general education
(e) Developing moral capacities

31. Next year will you return to Franklin College?
(a) Certainly will
(b) Probably will
(c) Uncertain
(d) Certainly not

32. From whom did you receive most help and assistance in selecting your major?
(a) High school counselor
(b) High school teachers
(c) Parents
(d) Counselor during pre-college counseling

33. When did you decide upon your major?
(a) Before you were a junior in high school
(b) During your junior year in high school
(c) As a senior to high school
(d) After coming to Franklin College

34. Which of the following was the determining factor in the selection of your major?
    (a) Financial rewards
    (b) Social prestige
    (c) An easy curriculum
    (d) A deep interest in the field
    (e) Others

35. How do you feel about your major?
    (a) Haven't decided upon a major yet
    (b) Very interested
    (c) Fairly interested
    (d) Not very interested
    (e) Not interested and plan to change

36. How well do you feel that tests administered in courses at Franklin College measure knowledge of specific subjects?
    (a) Very well
    (b) Fairly well
    (c) Poorly
    (d) Undecided

37. How well do you feel tests administered in courses at Franklin College measure broad comprehensive knowledge?
    (a) Very well
    (b) Fairly well
    (c) Poorly
    (d) Undecided

38. What is the major type of examinations you have taken in courses at Franklin College?
    (a) Objective
    (b) A combination of objective and essay
    (c) Essay

39. Which type of examination do you prefer?
    (a) Objective
    (b) A combination of objective and essay
    (c) Essay
    (d) Undecided

40. While attending college have you ever copied on an examination?
    (a) No
    (b) Once
    (c) More than once but not often
    (d) Fairly frequently

41. While attending high school did you ever copy on an examination?
    (a) No
    (b) Once
    (c) More than once but not often
    (d) Fairly frequently

42. What per cent of the students in your classes do you feel cheat on examinations
    (a) Less than 10%
    (b) Between 10% and 25%
    (c) Between 25% and 50%
    (d) 50% or more
    (e) Undecided

43. Which of the following do you consider most important in a teacher?
    (a) Ability to arouse interest and enthusiasm
    (b) Tolerance and respect for students and their ideas
    (c) Clarity in the presentation of the subject matter and ability to explain it.
    (d) Vast knowledge of subject matter
    (e) Other factors

44. Do you think professors are placing more emphasis on research than on teaching?
    (a) Yes
    (b) No
    (c) Equal
    (d) Undecided

45. Please react to the following statement: "Few instructors take genuine Interest in my personal welfare."
    (a) Strongly agree
    (b) Agree
    (c) Disagree
    (d) Strongly disagree

46. How often do you hold informal talks and conferences with your professors?
    (a) Frequently
    (b) Occasionally
    (c) Seldom
    (d) Never

47. Compared to other students in your classes, do you feel you are academically:
    (a) Superior most of the time
    (b) Superior sometimes
    (c) Equal most of the time
    (d) Inferior sometimes
    (e) Inferior most of the time

48. Do you feel that your classes at Franklin College are taught on the level of:
    (a) Slower students primarily
    (b) Average students primarily
    (c) Better students primarily
    (d) Superior students primarily
    (e) Each individual student in the class

49. How often do you cut class?
    (a) Frequently
    (b) Occasionally
    (c) Seldom
    (d) Never

50. Where do you obtain your meals?
    (a) College Cafeteria
    (b) At home -- commute
    (c) Restaurant
    (d) Prepare own meals

51. Where did you obtain your meals last semester?
    (a) College cafeteria
    (b) At home -- commute
    (c) Restaurant
    (d) Prepare own meals

52. Where is your place of residence
(a) With spouse
(b) At home with relatives
(c) At home -- commute
(d) College dormitories
(e) Off-campus

53. If you live in off-campus housing, do you:
(a) Live in an apartment by yourself
(b) Live in an apartment with other students
(c) Live in a rooming house with other students
(d) Rent a room in a private home
(e) Live at home -- commute

54. Have you pledged any campus social fraternity or sorority?
(a) Yes
(b) No

55. Which of the items below is appropriate?
Are you:
(a) An initiated member of a fraternity or sorority
(b) A fraternity or sorority pledge
(c) Not affiliated with a fraternity or sorority

56. If you are not a member of a fraternity or sorority, and were invited to join, would you join?
(a) Yes, definitely
(b) Yes, probably
(c) No, probably
(d) No, definitely
(e) Undecided

57. How often do you read The Franklin?
(a) Read each issue thoroughly
(b) Usually read parts of each issue
(c) Seldom read it
(d) Never read it

58. How many hours a week do you spend doing serious reading not required in your courses?
(a) None
(b) From 1 to 2 hours
(c) From 3 to 9 hours
(d) From 10 to 15 hours
(e) 15 hours or more

59. Since coming to Franklin College have you experienced any trouble in getting dates?
(a) Yes, considerably
(b) Yes, some
(c) No
(d) Don't know, haven't tried

60. How frequently do you date?
(a) Less than once a month
(b) Once or twice each month
(c) Once a week
(d) More than once a week
(e) Don't date

61. Which of the following extra-curricular activities do you participate in most frequently?
(a) Attend lectures, concerts, dramatics, and musical groups
(b) Student government
(c) Social organizations
(d) Professional or scholastic organizations
(e) None of the above

62. Which of the following recreational extra-curricular activities do you participate in most frequently?
(a) Attending athletic events
(b) Participating in organized or informal athletics
(c) Attending movies
(d) Watching television
(e) Other social events

63. If you drink alcoholic beverages, when did you first begin drinking?
(a) Before entering college
(b) After entering college

64. How often do you drink alcoholic beverages?
(a) Don't drink
(b) Less than once a month
(c) About once a month
(d) About once a week
(e) More than once a week

65. How would you classify most of your problems?
(a) Social
(b) Personal
(c) Academic
(d) Financial
(e) Other

66. Do you consider the discipline as administered by the Office of the Dean of Students:
(a) To be very fair in its decisions
(b) To be fair in most of its decisions
(c) To be unfair in most of its decisions
(d) To be unfair in all of its decisions
(e) Undecided

67. Have you been to the infirmary seeking medical help?
(a) No
(b) Yes, once
(c) Yes, two or three times
(d) Four times or more

68. How often do you use the facilities of the Key?
(a) Usually five or more times each week
(b) From 3 to 4 times each week
(c) From 1 to 2 times each week
(d) Once or twice each month
(e) Very rarely or never

69. How do you feel about the orientation program in which you participated last summer and in September?
(a) It was of great benefit
(b) It was of considerable value
(c) It was of some value
(d) It was of little value
(e) It was a waste of time and should be discontinued

70. What do you consider the most important feature of the ideal job?
(a) Provides an opportunity to use one's special abilities
(b) Permits one to be creative and original
(c) Enables one to look forward to a stable and secure future
(d) Provides one with a chance to earn a good deal of money
(e) Gives one an opportunity to be of service to others

71. Have you decided upon an occupation after college?
(a) Yes, definitely
(b) Yes, tentatively
(c) No

72 After college would you prefer to work:
(a) In Indiana
(b) In another midwestern state
(c) In some other section of the United States
(d) In a foreign country
(e) Any place you can find employment

73. Which one of the following is your primary source of financial support while attending college?
(a) Parents and other relatives
(b) Spouse's earnings
(c) Personal savings and part time employment
(d) Scholarships and loans
(e) Other sources

74. If you are employed part time, how much time do you devote to your employment each week?
(a) Less than 6 hours
(b) From 6 to 10 hours
(c) From 11 to 20 hours
(d) From 21 to 25 hours
(e) More than 25 hours

75. What are your average earnings per week from part time employment?
(a) Less than $5.00
(b) From $5.00 to $9.99
(c) From $10.00 to $19.99
(d) $25.00 or more

76. If you needed financial assistance to remain in school would you:
(a) Apply for a loan
(b) Apply for a scholarship
(c) Apply for part time employment
(d) Seek help from parents or other relatives
(e) Other sources

77. Has your attitude toward Franklin College changed since you enrolled here?
(a) No change
(b) Yes, Like it better
(c) Yes, Lide it less

78. Upon which of the following do you feel Franklin College places the most emphasis?
(a) Teaching and learning
(b) Research projects
(c) Producing a winning football team
(d) Extension services
(e) Public relations and public image

79. How many hours each week do you devote to studying?
(a) Less than 6 hours
(b) From 6 to 10 hours
(c) From 11 to 20 hours
(d) From 21 to 30 hours
(e) More than 30 hours

80. How frequently do you go home?
(a) Every weekend
(b) About every two weeks
(c) Usually once a month
(d) Usually once or twice each semester
(e) Other times

GRANT NUMBER XXIII

SEED GRANT PROPOSAL

A STUDY OF THE RELATIONSHIP OF IMMIGRATION TO THE CURRICULUM IN U.S. HISTORY

Submitted by

Professor Helen Joan Dugent
Instructor, Department of History
Franklin College

1027

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HISTORY OF UNITED STATES IMMIGRATION

The purpose of this project would be to investigate the topic "History of United States Immigration" with the goal of determining the feasibility of developing an instructional course dealing with this topic.

This investigation would be primarily done at Indiana University in order to utilize the library facilities and the excellent Folklore Institute which includes a separate 11,000-volume Folklore Library as well as Folklore Archives of more than 60,000 items. This material contains much concerning the minorities which have immigrated into this country.

The Investigation would be divided into three distinct parts:

1) Attain answers for the following questions:

   a) From where did the immigrants into the United States come?

   b) When did they come?

   c) Why did they come?

   d) Where did they settle?

   e) What did they bring?

   f) What retentions do they have of their former cultures?

   g) What did they find here?

   h) What reactions occurred between them and the native citizens?

2) Organize this material into the following outline:

   I) Origins of minority cults

      A. Colonial period immigration

      B. Immigration from Revolution to Civil War

      C. Post-Civil War and 20th century Immigration

   II) Conditions surrounding emigration

      A. Reasons causing emigration from native land

      B. Regions of settlement within the United States

   III) Distinctive contributions of minority groups

      A. Individual members who have been outstanding

B. Culture traits which have been assimilated

3) Determine possibility of course offering

a) What level?

b) Place in curriculum?

A breakdown of the estimated cost for this project would be as follows:

Transportation 25 trips @ 120 mi. @ 10¢ per mile	$300.00
Meals noon meal each of 25 days @ $1.00	25.00
Secretarial aid typing, copying costs, etc.	100.00
Purchase of microfiche 200 purchased at 25¢ each	50.00

If this project determines that development of such a course in the History of United States Immigration is feasible, an application for a small-projects grant would be submitted to enable this course to be implemented at the proper level.

FINAL REPORT

Project Number: 7-E-178X

Grant Number: OEG-1-7-070178-4299 (010)

DEVELOPMENT OF A COURSE

IMMIGRATION HISTORY

Submitted by

Helen Jean M. Nugent
Instructor: Department of History

Franklin College
Franklin, Indiana 46131

September 4, 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorhip are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.

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INTRODUCTION

In pursuing the problems outlined in my application for a CORD grant, I first investigated immigration in general. The purpose was to find out what sources were available, where such sources were located, what steps had been and are being taken by schools with courses in immigration history, and what general facts are common to all studies of immigration. Next I chose two groups as being fairly typical of the "old" and "new" immigration periods and investigated them more thoroughly. The two groups were the Irish-American to represent the "old" group, and the Italian-American to represent the "new" group.

Included in this final report are: (1) a brief summary of the answers to the questions posed in my application : (2) lists of partial holdings of the Immigrant Archives in Minneapolis: (3) Bibliography list for general immigration study used at Indiana University: (4) Bibliography for the specific Italian-American study: (5) Bibliography for the specific Irish-American study: (6) Final financial report.

The next step in this project would logically be application for additional funds for the purpose of preparing exact and specific textual materials from which to teach an immigration course.

I ORIGINS OF MINORITY CULTS

A. Colonial Period Immigration (1607-1776)

1. English
2. Scot
3. Irish
4. Dutch
5. Swedes
6. Walloons
7. French Huguenots
8. Jewish
9. German
10. Negroes
11. Scotch-Irish
12. Acadians.

B. "Old" Immigration Period (1776-1880)

1. English
2. Irish
3. German
4. Italian
5. Austro-Hungarian
6. Scandanavian
7. Canadians

C. "New" Immigration Period (1880-1920)

1. Italian
2. Greek
3. Slavic
4. Irish
5. German
6. Asiatic
7. Polish
8. Balkan
9. Russian
10. Canadian
11. Latin American

II CONDITIONS SURROUNDING EMIGRATION

Generally speaking, immigration has occurred during the entire history of the United States because of two broad factors: (1) Difficult conditions in th native country, and (2) The opportunity for seemingly improved situations in the hited States. The specific reasons for emigration varied according to the perio and the country.

During the colonial period, England used the North American area as a "dumping ground" for undesirables and malcontents. For that reason, large numbers of debtors, political prisoners and religious fugitives came to the New World from England, Scotland and Ireland. Political upheavals, religions dissention and economic problems on the European continent caused emigration to the non-English colonies of New Netherland and New Sweden and to the privately-owned "open" English areas such as the proprietorships of William Penn and George Calvert. Negro immigration during this period was in the form of slavery, largely from Western Africa, often through the West Indies. Jewish immigration came first from Portugal to New Netherland in 1654 and communities of Spanish and Portugese Jews grew until by 1776 an estimated 2,000-3,000 were present in the colonies. Scot Lowlanders transplanted to Ulster formed the largest group of immigrants as more than 250,000 Scotch-Irish came to America primarily due to lack of tenure security in Ulster. The largest group of French immigrants were Huguenots, but in 1755 British authorities who were suspicious of the Acadians removed more than 6,000 from Nova Scotia to southern colonies.

In the "Old" immigration period, the majority of immigration was from northern Europe and the British Isles. Continued political disruptions throughout Europe combined with increasing economic difficulties in Scandanavia and the British Isles were the major reasons. Italian emigrants were primarily from Northern Italy, culturally very similar to the Austrians and Germans. After 1837 definitely more Canadians were coming to the U.S. than were U.S. citizens emigrating to Canada. This was partially due to political problems, and partially due to problems of land distribution.

In the "New" immigration period, the focus shifted from Northern Europe to Southern and Eastern Europe, with large numbers of Greeks, southern Italians, and

Balkan residents coming to the United States. Jewish immigration continued, largely from Poland and Russia. Asians were imported in large numbers for employment in western railroad construction. Evident numbers from Germany and Ireland continued, though they merged quickly with older immigrants from those areas. Laborers for the Southwest were brought in from Central America. Canadians came in large numbers just after World War I to the large Middle West industrial centers.

In some cases, the emigrant found conditions in the New World to be a great improvement over what he had left. This was particularly true during the colonial period when the adventurous found a very real place in building a new country without the restrictions they had left behind. During this period regional location was usually determined by avoiding groups whose beliefs might clash. Thus the Roman Catholic haven to be established by Lord Baltimore was located far from the anti-Catholic Massachusetts Bay. When not enough Roman Catholics came to fill Maryland other groups were allowed only if tolerance of Catholicism remained the law. With the enormous acreage available for settlement, there was little necessity to remain where one was not wanted. Only the Negro had absolutely no choice.

During the "old" period, with the entire continent opening up for settlement, several immigrants made their way to the mid-west and west where they tended to settle in ethnic clusters, but with little friction between groups. In the cities along the Eastern seaboard, the numerous Irish began the formation of potentially powerful political machines by affiliating with the Democratic party. The English-speaking immigrants found far less hostility from American citizens than did other groups. Due to the lack of job opportunity in the slave economy of the South, few immigrants settled in that area. After the Civil War the Negro found himself

competing with the cheapest labor in Northern industry and Southern agriculture. His cultural background was as foreign in both situations as that of the immigrant.

The "new" immigration period saw a change in type of immigrant and a corresponding change in the attitude toward immigrants. The Southeastern European emigrants were victims of the cruellest types of poverty, largely uneducated, illiterate, possessing little except large numbers of children. In coming to the United States they had left behind all that was familiar to them. They tended to cluster in ethnic groups located in poorer sections of larger cities, forming "Little Italy", "Little Greece", and the Asiatics had their "Chinatown". Full acceptance was hindered by many factors, including elements from within as well as without their own cultures. The South was still not economically able to support immigrant labor and the Ku Klux Klan reflected the nativist fear of these foreigners. For all of these reasons in addition to the general feeling of isolation experienced in the United States after World War I, a move for immigration restriction resulted in legislative limitations in the 1920's. The general chaos in post-World War II European politics brought some leniency to allow for the entrance of persons displaced by Nazi and Communist power struggles.

III DISTINCTIVE CONTRIBUTIONS OF MINORITY GROUPS

It would be impossible to list all immigrants who have made significant contributions to the growth of the United States. Each of the original 13 colonies were founded and sustained by immigrants. Much of the impetus for the Revolutionary success came from the non-English residents who had no desire to remain subjects of the British crown. Our industrial growth gave almost overnight recognition to Scotsman Andrew Carnegie. German Carl Schurz pioneered in social politics during and after the Civil War. Intelligent and educated young men found the opportunity for economic growth in the United States and the nation

benefitted from their success. The "new" immigration wave brought fewer outstanding individuals until the political clouds preceeding World War II caused men like Albert Einstein and Enrico Germi to seek the liberty offered by the United States. Post-war additions included several rocket and missile experts, among them Werner Von Braun.

Culture traits are also difficult to pin-point in a nation like the United States where the entire culture is a composite of what citizens have contributed. Many holiday customs stem from the colonial and "old" immigration periods and several religious festivals are the result of Southeastern European immigration during the "new" period. Food types and architectural styles which are considered regional in the United States are often the result of a strong immigrant culture in the area. In a detailed study it would soon be apparent that there are very few "American" culture traits which belonged in reality to the native American Indian. And since even the American Indian was at one time and "immigrant" to this hemisphere, his traits, too, may be called the result of immigration!

IV FEASIBILITY OF COURSE OFFERING

There is no doubt that a course in Immigration History is a definite possibility at a college such as Franklin, and infact may become a necessity within the next decade. Proof of this is evidenced by the fact that historians are showing increased interest in ethnic groups and many such groups have formed their own historical societies. (American Italian Historical Association, American Jewish Historical Society, Polish American Historical Association, Swedish Pioneer Historical Society, Swiss American Historical Society, etc.) At the December, 1969, convention of the American Historical Association a constitution and by-laws were drawn up for a new organization within the AHA to be known as "The Immigration History Group." A newsletter is published twice yearly to inform

members of other work done in the field. Bills have recently been introduced in Congress to allow funds for institutes and publications "to improve the opportunity of students in elementary and secondary schools to study cultural heritages of the major groups in the Nation." If this opportunity is to be available to elementary and secondary students, it will be necessary for courses on the college level to prepare those who will teach it on the elementary and secondary levels.

A four-hour course could easily be justified, especially if Negro (or 'Black') and American Indian cultures were included. Due to the lack of general textbooks available on the subject, every instructor would have to choose his own major topics and suitable readings for each, along with the requirements for the course.

Among schools currently offering courses in immigrant history or phases of it are: U.C.L.A. (Prof. Saloutos): Pomona College (Franklin Scott): Bernard Baruch School of CCNY (Selma Berrol): Lehigh University (D.C. Amidon): Rochester Institute of Technology (Salvatore Mondello): University of Pennsylvania (Alfred Kutzek): Wayne State University (Leonard Moss): John Carroll University (George Prpic): San Francisco State College (Edison Uno--focusing on Japanese-American history).

Examples of some types of courses and topics are:
At Kent State University, Henry Leonard teaches a graduate-undergrad course with weekly topics of: Migration theories, Reasons for emigration, Immigrants-Churches, Immigrants and the Economy, Nativism, Negroes as Immigrants, Assimilation. Each subject has a core reading with additional review books for background. Undergraduates are required to take all examinations while graduate students write a paper and take only the final examination. At Columbia, Floyd Shumway offers

an upper-level research/discussion course with assigned readings required for each weekly meeting and a syllabus of other suggested readings. The topics and assigned readings are: Englishmen move to New England (S.C. Powell, Puritan Village): Heterogeneous Migration Builds a Nation (J.G. Leyburn, The Scotch Irish): The Plot of the Involuntary Immigrant (Elkins, Slavery): The Immigrant Comes to the City (R. Ernst, Immigrant Life in New York 1825-1863): The Waves of German Migration, (Mack Walker, Germany and the Emigration): The Flood of Irish Migration (Oscar Handlin, Boston's Immigrants): New Migration from Eastern Europe (M. Rischin, The Promised City): The Gates Close Slowly (J. Higham, Strangers in the Land): Theories of Assimilation (M. Gordon, Assimilation in American Life): Assimilation in Practice (Donald B. Cole, Immigrant City): Where do we Stand Today? (Glazer and Moynihan, Beyond the Melting Pot).

At the University of Nebraska, Professor Frederick Luebke conducts a readings and problems course which meets weekly and discusses these topics: Filiopietism: Push and pull and the crossing: Old and New Immigration: Assimilation and Cultural Clash: Nativism: Legislation: Political Behaviour: Belletristic Literature: Churches: Comparative Dimension: and Bibliography. Students are required to read in works by Maldwyn Jones, John Higham, Marcus Hansen and Oscar Handlin and to propose three critical reviews, dealing with: (1) Hansen's, The Uprooted, (2) an immigration novel, and (3) the historical literature of one major nationality.

Other schools have combined immigration and labor history because of the strong relationship between the two movements. Attached to this report is an immigration history reading list used by Dr. Irving Katz in teaching Immigration and Labor History at the Undergraduate level at Indiana University.

It would be desirable for anyone interested in teaching this topic to remain aware of what others are doing by subscribing to the Immigration History Newsletter

and to visit the Center for Immigration Studies and Immigrant Archives located at the University of Minnesota in Minneapolis. (lists of microfilmed ethnic newspapers and manuscript collections attached) In addition to the listed material this collection includes organizational charters, minutes of meetings, constitutions, bylaws, anniversary publications, private correspondence diaries and foreign language periodicals for these language groups. Albanian, Armenian, Croatian, Czech, Estonian, Finnish, Greek, Hungarian, Italian, Latvian, Lithuanian, Macedonian, Polish, Romanian, Russian, Serbian, Slovak, Slovene and Ukrainian. Clearly it is a valuable source of information concerning the "new" period immigration. Although materials are non-circulating, the collection is open to transient scholars and xerox copies may be made of anything.

April, 1970

List of the manuscript collections in the Immigrant Archives, University of Minnesota Libraries. None f the collections have undergone a final processing. A few are under preliminary control. More detailed descriptions of these holdings are available in the Immigrant Archives, 322 Walter Library, University of Minnesota, Minneapolis, Minnesota 55455

	Size in Linear Feet
General	
1. American Council for Nationalities Services, New York City Papers, 1918-1964 (These papers are in the process of being deposited in the Immigrant Archives)	(to be determined when the papers are entirely acquired)
Croatian	
1. Preveden, Francis Ralph Papers, 1924-1959 Born in Croatia in 1890, died in 1959. Author of History of the Croatian People. Professor of Balto-Slavic languages in various American universities in the 1920's and 1930's. Employed as a translator in the Defense Department of the U.S. Government during World War II and later with the Navy Department.	21 feet
2. St. Mary's Roman Cqtholic Church, Rankin, Pennsylvania Collection, 1896-1939 This is one of the oldest and largest Croatian parishes in the U.S.	4 feet (including 6 ledgers)
Czech	
1. Roucek, Joseph Papers, (?)-1970 Author of books and articles on European emigration to the U.S., especially the Slavic peoples. Contributed heavily to sociology journals on subject of immigrants in the U.S. Presently resides in Bridgeport, Connecticut.	(to be determined when the papers are entirely acquired)
Finnish	
1. Central Cooperative, Inc., Nashwauk, Minnesota Collection, 1920-1958 Financial and minute books of the cooperative.	2.5 ft (including 20 ledgers)

	Size in Linear Feet
2. Work People's College, Duluth, Minnesota Collection, 1900-1950 The college was established to serve the needs of Finnish immigrants in socialist education. It was dissolved in 1952.	5 ft (including 8 ledgers)

German

1. Banater Benefit Society, Cleveland, Ohio Collection, 1911-1959 The society was organized in 1911 by the Roman Catholic German immigrants who came from the eastern region of Banat, which is presently in Yugoslavia and Romania. These people were descendants of the Swabians who settled in the Banat during the seventeenth and eighteenth centuries and who began coming to America toward the end of the nineteenth century.	1.5 ft (consists entirely of 14 ledgers)

Hungarian

1. Balogh, Dezso De A. Collection, 1938-1965 On the editorial board of Kepes Magyar Magazin, a Hungarian periodical published in New York City. The collection consists of journals, pamphlets, and scrapbooks of newspaper clippings pertaining to communism in world politics and its relevance to Hungary.	2 ft.

Italian

1. American Committee on Italian Migration, Chicago Chapter Papers, 1954-1967 This chapter of the ACIM has had contact with various U.S. Congressmen concerning immigration legislation, and with individuals in Italy who requested assistance in emigrating to the U.S.	2.5 ft.
2. Cassettari, Rosa Collection, No dates A collection of folk tales and autobiographical accounts as told to Marie Hall Ets.	0.5 ft.

	Size in Linear Feet
3. Clemente, E. Papers, No dates determined Editor of La Parola del Popolo published in Chicago. Includes the papers of various persons active in the Italian-American Labor and Socialist movements including Emilio Grandinetti and Domenico Saudino.	3.5 ft.
4. Donnaruma, James V. Papers, 1897-1962 Born in Italy in 1874, died in 1962. Editor and publisher of the newspaper Gazzetta del Massachusetts in Boston.	3 ft.
5. Odone, Father Nicholas Charles Papers, 1895-1947 Born in Italy in 1868, died in 1947. Pastor of the Holy Redeemer Church in St. Paul, Minnesota, 1899-1947. The collection includes 110 volumes of Father Odone's personal diaries.	10 ft.
6. Pioletti, Rt. Rev. Msgr. Louis Papers, 1915-1930 Born in Italy in 1887, Pastor of the Holy Redeemer Church and of the Church of St. Ambrose in St. Paul, Minnesota since 1925. The collection has items related to the Holy Redeemer Church.	1.5 ft.
7. Quilici, George L. Papers, 1920-1969 Born in Chicago, Illinois, in 1897, died in 1969. Elected Judge of the Circuit Court of Illinois in 1962. The collection includes several scrapbooks revealing his career in law and his activities in the Italian community of Chicago.	7 ft.
8. Sisca, Alessandro Papers, 1898-1940 Born in Italy in 1875, died in 1940. He was a poet and published under the pseudonym of Riccardo Cordiferro. Also a journalist, he was co-editor of La Follia di New York. The collection includes original manuscripts of his poems.	6 ft.

	Size in Linear Feet
9. Teresi, Matteo Collection, 1914-1968 Born in Italy in 1875. Past editor of L'Araldo in Cleveland. Author of articles on social problems.	0.5 ft.

Latvian

1. Amerikas Latviešu Palidzibas Fonda (Latvian Relief Fund of America, Inc., Philadelphia, Pennsylvania) Collection, 1955-1969 This organization was established to assist Latvian refugees throughout the world and those desiring to gain entry into the U.S. The collection consists of minutes of meetings and documents related to the work of the Fund.	0.5 ft.
2. Daugavas Vanagi A.S.V. (Latvian Welfare Association, Chicago, Illinois) Collection, 1956-1968 This organization was established by Latvian displaced persons who emigrated to the U.S. after World War Two. It has branches throughout the U.S. and Canada. The collection includes minutes of the board meetings.	1.5 ft.
3. Slaucitajs, Leonids Collection, 1947-1969 Born in Latvia in 1899. A geophysicist. Came to the United States from Australia in 1966 and resides in Denver, Colorado. The collection includes his published works on geophysics and Latvian cultural activities in Australia (music and art).	1. ft.

Polish

1. Fox, Reverend Paul J. Papers, 1890's-1940's Born in Poland in 1874, now deceased but date of death unknown. These papers document the Rev. Paul Fox's academic, religious, social and political activities in Poland and the United States. Included are materials relating to his work at the Laird Community House in Chicago. He was a Presbyterian clergyman and was pastor of St. Paul's Polish Presbyterian Church, Baltimore, 1910-1924.	22 ft.

	Size in Linear Feet
Romanian	
1. Union and League of Romanian Societies In America, Inc. Papers, 1900-1958 This is a Romanian benefit society. The collection consists of correspondence of the headquarters located in Cleveland, Ohio and minute and financial books of the main office and its numerous branches throughout the United States.	19.5 ft (includes 129 ledgers)
Slovak	
1. First Catholic Slovak Union Papers, 1890-1958 This is a fraternal benefit society with headquarters in Cleveland, Ohio. The collection includes the original applications for membership in the organization, official correspondence, auditor's reports, minutes of conventions, registers of members.	40 ft.
Slovene	
1. Ave Maria Printery, Lemont, Illinois Papers, 1956-1967 Consists entirely of correspondence to and from subscribers and *Ave Maria*, a Slovene monthly magazine, and the *Ave Maria Koledar*, an annual publication.	3.5 ft.
2. Berlisg, John Collection, 1920-1945 Born in Slovenia in 1882, died in 1945, Director of a Slovene singing group "Svoboda" in Detroit. Translated librettos of German operettas into Slovene. The collection includes photographs of Mr. Berlisg and his singing group.	0.5 ft.
3. *Glas Naroda* Papers, 1953-1963 *Glas Naroda* was a Slovene newspaper published in New York City from the late 1890's until 1963. The collection includes correspondence to and from subscribers.	0.5 ft.

	Size in Linear Feet
4. Golobitsh, Mary Papers, 1945-1963 These are the letters written by Mary Golobitsh, a Slovene immigrant, to her niece, Ana Sklander in Slovenia. In many of the letters there are descriptions of the life of Slovene immigrants in America.	0.5 ft.
5. Ivan Cankar Dramatic Society Collection, 1926-1946 This drama group was organized in Cleveland in 1926 and was named after the Slovene playwright, Ivan Cankar, who died in 1918. The papers include the minutes of the monthly meetings of the society and miscellaneous items pertaining to its activities.	0.5 ft.
6. Pogorelc, Matija Papers, 1895-1957 Born in Slovenia in 1868, died in 1957. Mr. Pogorelc was a traveling salesman of Slovene religious articles and jewelry and visited Slovene communities throughout the United States. He contributed articles describing these visits to Slovene newspapers and there are many clippings of such in the collection. Included also are many letters written by Slovenes in the U.S. to him and his replies.	6 ft.
7. Sholar, Wenceslau Papers, 1894-1937 Born in Slovenia in 1876, died in 1942. This collection consists entirely of letters written by Wenceslau Sholar, an immigrant priest who served Slovene parishes in Illinois and Minnesota, to his brother Jacob Sholar in Slovenia. They describe the very early life of Slovenes in these states.	1.5 ft.
8. Slovene National Benefit Society Papers, 1904-1952 In addition to the papers of the Slovene National Benefit Society, this collection has, as supplementary material, items related to the Jugoslav Socialist Federation and its official organ "Proletarec," as well as Branch No. 1 of the Jugoslav Socialist Federation. This material has been consolidated since the Society and the Federation have been in close collaboration over the years, with headquarters	60 ft (including 270 ledgers)

Size in
Linear Feet

in Chicago. The majority of the ledgers are those of the Slovene National Benefit Society, being the official business of the Chicago Main Office. Numerous minute and financial books of lodges around the country are included.

Ukrainian

1. Central Representation of Ukrainian Emigrants In Germany — 5 ft.
Papers, 1945-1960
This organization served as a sponsor for Ukrainians in Germany after World War II to emigrate from that country. The collection includes petitions of individuals to emigrate to the U.S. It cooperated with the International Relief Organization.

2. Halich, Wasyl — 2.5 ft.
Papers, 1920-1940
Born in Carpatho-Ukraine in 1896. Professor of European and Russian History at the Wisconsin State University in Superior until 1966. The collection includes correspondence and clippings relevant to the publication of his book Ukrainians In the United States, Chicago, University of Chicago Press, 1937.

3. Onatzky, Evhen — 29 ft.
Papers, 1918-1966
Born in 1894 in Ukraine, presently residing in Buenos Aires, Argentina. He was a delegate to the Paris Peace Conference in 1919, the cultural attache of the diplomatic mission of the Ukrainian National Republic to Italy, 1920-1923. He was a Professor of Ukrainian Philology in Naples and Rome from the 1920's until 1943. The collection includes correspondence of a personal and business nature from the 1950's and 1960's when Professor Onatzky was editor of the Ukrainian newspaper Nash Klych in Buenos Aires. Much of this correspondence is with individuals and organizations of the Ukrainian communities in South America, the United States, and Canada.

	Size in Linear Feet
4. United Ukrainian Relief Committee, Ukrainian War Relief, Inc., Michigan Commission on Displaced Persons. Papers, 1943-1955 The Michigan Commission on Displaced Persons included the Ukrainian Relief Committee and the Ukrainian War Relief Committee which was organized in 1949. In 1955 it was sponsored by the United States Department of State. The collection includes documents on the settlement of Ukrainian displaced Persons in Michigan.	2.5 ft.

May, 1970

Ethnic Newspapers on Microfilm in the Immigrant Archives

CROATIAN:

1. Domovina. New York, N.Y. January 7, 1916 - October 26, 1917.
2. Hrvatska Zastava. Chicago, Illinois. August 3, 1905 - October 30, 1917.
3. Hrvatski Glasnik. Allegheny, Pennsylvania. December 12, 1908 - September 13, 1919.
4. Hrvatski List. New York, N.Y. January 20, 1922 - December 30, 1941.
5. Hrvatski Svijet. New York, N.Y. July 23, 1908 - June 30, 1913; January 1, 1915 - June 30, 1920.
6. Jadran. San Francisco, California. February 26, 1908 - December 29, 1910
7. Narodni List. New York, N.Y. June 4, 1898 - June 30, 1920.
8. The Sokol. St. Louis, Missouri. May, December, 1933; January - July, October - November, 1934.
9. Zajednicar. Pittsburgh, Pennsylvania. January, 1907 - December 25, 1940.

CZECH:

1. Kewaunske Listy. Kewaunee, Wisconsin. 1892 - 1900.
2. Pravo. Cleveland, Ohio. February 6, 1912 - January 25, 1916.
3. Slavie. Racine, Wisconsin. 1861 - 1865; 1870 - 1874; 1875 - 1893.
4. Vlastenec. La Crosse, Wisconsin. September 4, 1903 - July 8, 1927.

FINNISH:

1. New Yorkin Uutiset. Brooklyn, New York. January 4, 1912 - December 31, 1918.
2. Tyomies Eteenpäin. Superior, Wisconsin. November 23, 1909 - June 30, 19 October 3, 1915 - April 29, 191

ITALIAN:

1. L'Avvenire. Utica, New York. October 6, 1900 - December 9, 1905.
2. Il Corriere del Popolo. San Francisco, California. January 4, 1916 - December 20, 1962.

ITALIAN (cont.):

3. La Fiaccola. Buffalo, New York. August 7, 1909 - December 1, 1912.

4. La Luce. Utica, New York. November 16, 1901 - January 29, 1921.

5. Il Messaggiero. Utica, New York. January 4, 1936 - October 30, 1948.

6. Il Pensiero Italiano. Utica, New York. July 3, 1914 - April 20, 1929.

7. Il Piccolo Messaggero. Kansas City, Missouri. January, 1926 - December, 1965.

8. La Voce del Popolo. San Francisco, California. 1868 - 1905.

9. La Voce del Popolo Italiano. Cleveland, Ohio. March 27, 1909 - October 7, 1922.

POLISH:

1. Jutrzenka. Cleveland, Ohio and Pittsburgh, Pennsylvania. September 13, 1893 - December 19, 1894.

2. Słonce. St. Paul, Minnesota. 1898 - 1900.

3. Slowo Polskie. Utica, New York. September 25, 1911 - December 31, 1914; January 6, 1922 - December 27, 1940.

4. Sokol Polski. New York, N.Y., Pittsburgh, Pennsylvania. 1910 - 1967.

5. Straž. Scranton, Pennsylvania. 1897 - 1898; 1900 - 1902; 1913; 1917; 1919; 1920 - 1937.

6. Wiadomosci Codzienne. Cleveland, Ohio. January, 1918 - December, 1928.

ROMANIAN:

1. America. Cleveland, Ohio. September, 1906 - 1966.

2. Steaua Nostra. New York, N.Y. April 1, 1912 - November, 1931.

RUSSIAN:

1. Novyi Mir; Russkaya Rabochaya Gazeta. New York, N.Y. 1911 - 1919; 1926 - 1938.

2. Russko-Amerikanskiĭ Pravoslavnyĭ Vĭestnik. New York, N.Y. 1896 - 1898. (The Russian Orthodox American Messenger)

SERBIAN:

1. American Srbobran. Pittsburgh, Pennsylvania. 1906 - 1912; 1918 - 1940.

2. Slobodna Reč. Pittsburgh, Pennsylvania. December 18, 1934 - December 29, 1948.

3. Srbadija. Pittsburgh, Pennsylvania. March 31, 1921 - December, 1927.

SLOVAK:

1. Amerikansko Slovenske Noviny. Pittsburgh, Pennsylvania, New York, N.Y. and Connellsville, Pennsylvania. November 30, 1893 - June 22, 1904.

2. Jednota. Cleveland, Ohio, Middletown, Pennsylvania. December 6, 1893 - December 25, 1940.

3. Narodne Noviny. Pittsburgh, Pennsylvania. 1910 - 1941.

4. Slovak v Amerike. New York, N.Y., Pittsburgh, Pennsylvania. January 4, 1894 - June 21, 1904.

SLOVENE:

1. Amerikanski Slovenec. Chicago, Ill., Tower, Minn., Joliet, Ill., Cleveland, Ohio. 1891 - 1946. (Title is Edinost from 1920 - 1925).

2. Ameriška Domovina. Cleveland, Ohio. 1907 - 1962. (The two previous titles of this newspaper were Nova Domovina, 1907 - 1908 and Clevelandska Amerika, 1908 - 1918. Since 1918 it has been Ameriška Domovina).

3. Glas Naroda. New York, N.Y. 1912; 1916; 1917; 1919 - 1921.

4. Narodni Vestnik. Duluth, Minnesota. 1911 - 1914.

5. Proletarec. Chicago, Illinois 1906 - 1918; 1929 - 1952.

6. Prosveta. Chicago, Illinois. 1902 - 1967. (The two previous titles of this newspaper were Glas Svobode, 1902 - 1907 published in Pueblo, Colorado and Glasilo S.N.P.J., 1908 - 1916 published in Chicago. Since July 1, 1916 it has been Prosveta).

7. Slovenski Narod. New York, N.Y. April 1, 1915 - September 25, 1917.

UKRAINIAN:

1. Svoboda. Jersey City, New Jersey. 1893 - 1967.

I. Katz

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Elin W. Anderson, We Americans (1937)
Louis Adamic, From Many Lands (1940)
" " , A Nation of Nations (1947)
A Report on World Population Migrations, as Related to the United States of America (1956)
Edith Abbott, ed., Historical Aspects of the Immigration Problem: Select Documents (1926)
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William S. Bernard, Ed., American Immigration Policy--A Reappraisal (1950)
David F. Bowers, ed., Foreign Influences in American Life (1944)
Ray A. Billington, The Protestant Crusade, 1800-1860 (1938)
Francis J. Brown and Joseph S. Roucek, eds., One America (1945)
Edmund de S. Brunner, Immigrant Farmers and Their Children (1929)
Lawrence G. Brown, Immigration, Cultural Conflicts, and Social Adjustments (1933)
Bruno Bettelheim and Morris Janowitz, The Dynamics of Prejudice (1950)
Henry S. Commager, ed., Immigration and American History (1961)
John R. Commons, Races and Immigration in America (1907)
David Chalmers, Hooded Americanism (1965)
Robert A. Divine, American Immigration Policy, 1924-1952 (1957)
Maurice R. Davie, Refugees in America (1947)
Humphrey J. Desmond, The A.P.A. Movement (1912)
Robert Ernst, Immigrant Life in New York City, 1825-1863 (1949)
Herman Feldman, Racial Factors in American Industry (1931)
Henry P. Fairchild, The Melting-Pot Mistake (1926)
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Edwin C. Guillet, The Great Migration: The Atlantic Crossing...Since 1770 (1937)
Paul W. Gates, The Illinois Central Railroad and Its Colonization Work (1934)
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Marcus L. Hansen, The Atlantic Migration, 1607-1860 (1940)
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Maldwyn A. Jones, American Immigration (1960)
Harry V. Jerome , Migration and Business Cycles (1926)
John F. Kennedy, A Nation of Immigrants (1964)
Mary G. Kelly, Catholic Immigrant Colonization Projects in the United States, 1815-1860 (1939)
Donald P. Kent, The Refugee Intellectual (1953)
Ellen R. Knauff, The Ellen Knauff Story (1952)

Sidney Kansas, United States Immigration: Exclusion and Deportation (1940)
Samuel Lubell, The Future of American Politics (1952)
William M. Leiserson, Adjusting Immigrant and Industry (1924)
Ella Lonn, Foreigners in the Union Army and Navy (1951)
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Gustavus Myers, The History of Bigotry in the United States (1943)
John M. Mecklin, The Ku Klux Klan (1924)
W. Darrell Overdyke, The Know-Nothing Party in the South (1950)
Richard C. Overton, Burlington West: A Colonization History of the Burlington Railroad (1941)
Robert E. Park, The Immigrant Press and Its Control (1922)
" " " and Herbert A. Miller, Old World Traits Transplanted (1921)
Edward A. Ross, The Old World in the New (1914)
Peter Roberts, The New Immigration (1912)
George M. Stephenson, A History of American Immigration, 1820-1924 (1926)
Bertram Schrieke, Alien Americans (1936)
William C. Smith, Americans in the Making (1939)
William Seabrook, These Foreigners (1938)
Barbara M. Soloman, Ancestors and Immigrants (1956)
Edward Steiner, On the Trail of the Immigrant (1906)
Louis D. Scisco, Political Nativism in New York State (1901)
Laurence F. Schmeckebier, History of the Know-Nothing Party in Maryland (1899)
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Carl Wittke, We Who Built America (1939)
Thomas J. Woofter, Races and Ethnic Groups in American Life (1933)
Frank J. Warne, The Immigrant Invasion (1916)
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FINAL REPORT

Books	$ 17.61
Supplies	8.26
Travel	336.00
Meals	30.90
Xerox	2.23
Secretarial & Research Assistance	80.00
Total	$475.00

GRANT NUMBER XXIV

SEED GRANT PROPOSAL FOR PLANNING A SPECIAL STUDIES PROGRAM

Submitted by

Karl C. Helms

Director of Special Studies

Knox College

April, 1970

1058

SEED GRANT FOR THE SPECIAL STUDIES PROGRAM

I. STATEMENT OF PURPOSE

The purpose of this request is to enable the Office of Special Studies at Knox College (A) to study ways of recruiting and selecting minority students for the Special Studies Program without using standard admissions predictors, (B) to provide special tutorial assistance, innovating curricula and counseling and (C) to originate effective evaluation procedures for the program.

We intend to work toward a program for students whose educational backgrounds and economic enviroments have, for one reason or another poorly prepared them to perform well in college. We expect that these students:

(I) would score low in conventional measures such as the CEEB tests,

(2) would perhaps not have been enrolled in college preparatory courses in high school,

(3) but would be recommended by people who knew them personally and well, as having the potential and motivation to prepare themselves for regular college work if given the opportunity and the proper help in the right atmosphere,

(4) may in other ways be members of the physically handicapped.

II. RECRUITMENT TARGET AREAS

The Special Studies recruitment Program will attempt to recruit students from a large variety of geographic locations. This would mean locating students in areas as large as Chicago and as small as Galesburg and Moline. High school counselors and guidance personnel will be contacted in an effort to ascertain names of students who might fit into the program. For those students who have yet to graduate from high

school, counseling might be provided, in conjunction with the high school, counselors to give added motivation in undertaking postsecondar education. Visitations to a variety of Illinois high schools with students now enrolled in the Special Studies Program should be a major par of this inquiry. The rationale for the the employment of current students is their knowledge of both the high school enviroment and the Kno College community. It is my hope that eventually funds will be provided to hire one full-time recruiter who would be responsible for the recruitment of students in areas other than the State of Illinois.

III. TUTORIAL ASSISTANCE

This inquiry will investigate ways of providing assistance to students entering into the Special Studies Program. We will attempt to compile evidence which will aid us in exploring the availability of tutorial assistance within the Knox College-Galesburg area. Personnel for the tutorial program will sought from various groups--qualified students on salary, faculty, faculty wives, and other people in the community with special skills and the willingness to help in this program.

IV. INNOVATING CURRICULA

At present, we have established a reading and writing workshop to correct deficiencies in language skills. However, more investigation is needed to improve these facilities. (More information will be provided on this area in a separate request.)

Studies are underway at present to discover ways of effectively utilizi existing educational facilities. For example, I have discussed with faculty members the possibility of extending a one credit, one term course over a period of two terms. Other areas of innovation and chang can also be explored which will allow for a flexible program during the first one or two years. Thus, students will be able to work at their

own pace until they are prepared to meet the regular academic expectations of Knox College. To facilitate the need for a slower pace by students in the program the Special Studies Department allows a student to take up to five years to complete the B.A. degree instead of the customary four years.

V. COUNSELING

Perhaps the key to the entire program would be in the area of counseling and career guidance. Formal counseling for all students is provided at Knox College at the present time. A resident clinical psychologist is available for consultation in areas in which students sometime encounter difficulties in matters of emotional stress and personal adjustment. The efforts of the Department of Special Studies and those of the clinical psychologist will be coordinated for more effective aid to the students in the program..The vocational guidance office can provide information to the Department of Special Studies in decisions regarding vocational goals.

The director of the Special Studies Program will work closely with the students on planning their academic work, and on any personal or social problems which might arise.

VI. EVALUATION

At the end of each academic term the director of the Special Studies Program and the director of the reading center will submit to Knox College a written evaluation of the entire Special Studies Program. This report will ascertain the effectiveness of the (A) recruiting program--we will explore the target areas from which students have been recommended. We will try to assess the number of students recommended for the special program against the actual number of students

admitted into Knox College. The rational for this kind of assessment is that once agencies are contacted by colleges they expect those contacting schools to accept atleast one student from their program. It is very important that effective records be maintained to show recruiting efforts in the various target areas. (B) tutorial assistance--in evaluating the tutorial aspects of this program we will first examine the kind of problems each student is having in the regular academic curriculum. Kinds and amount of tutorial help will be based on the individual needs of the student. The kinds of information needed would be:

(I) the instructors name and course,

(2) the specific nature of the students problem(s)

(3) amount of time the instructor could spend aiding the student,

(4) the students particular academic standing in the class before and after concentrated tutorial assistance was provided,

(5) the grade the student earned at the end of the term.

(C) courses added to the curriculum which are designed especially for the Special Studies Program.--At this time the department of Special Studies has not designed any special programs for the students excepted as noted in item "D" below. We will conduct a special orientation program for these students as soon as they arrive on campus. This orientation program would be in addition to Knox College's regular new student orientation program. The program will only meet during the first week of school (unless there is evidence to show that more time is needed in this socialization process) and will be a non-credit program. The aim of this program is to introduce the students to Knox College specifically and the academic community in general. If the program is successful we might be able to observe an easier transition for these

special students from the high school to the college community.

(D) reading program--At present the director of the reading center attends one class (Economics 103) that all of the freshman entering Spring Term have in common. She participates in the class in the same manner as the special students. The notes and reading assignments taken by her are used as the basis for evaluating the reading, note taking and study habits of the students. However, the task of attending classes with the students entering the program in the fall of 1970 will be relegated to two students picked by the director of the reading center, in consultation with two members of the English Department, a member of the Education Department and the director of the Special Studies Program. The important aspect of this type of study session is that the students can learn the fundamentals of attending lectures (that is effective note taking and class participation) and learn fundamentals of effective study habits.

In the language arts area of the reading center the students are assigned a text from which literary selections--prose, poetry, drama passages on current issues by contempory figures--will be made the bases for lessons in language use and usage. This class will examine and be tested over modes of prose expression within the four types of prose; oral and written expression and essay assignments will serve as measures for evaluating the students progress. This course has been assigned $\frac{1}{2}$ academic credit. (E) Counseling and testing.

(I) Testing: each student entering into the special program will be required to take a series of examinations. For those students entering the program in the fall of 1970 we will adminster the following tests:

(a) Strong Vocational Interest Test--For men and women. This test will be used to show the student, with a fair degree of accuracy, whether or not he would like certain occupations. This is not, however, a test of intelligence or special abilities. It does measure the extent to which the students interest agree or disagree with those of successful men in a given occupation.

(b) The Motivation Analysis Test (MAT)

(I) Administration: group or individual,

(2) Time required: 50 minutes, or somewhat more with slow readers,

(3) Scoring: objective: by stencil key, and tables, from answer sheet

(4) Range: suitable for ages seventeen years through adult period,

(5) Vocabulary: newspaper reading level,

(6) Measures: scores on ten independent interest and value dimensions.

(c) The Davis Reading Test and the Triggs Dianostic Reading Test will be administered by the director of the reading center.

(2) Counseling--All students in the Special Studies Program will be advised and counseled by the director of the program with the advise of the director of the reading center and the college's Clinical Psychologist.

(a) Academic counseling: each student will meet with the director atleast three times each term (more if needed) to discuss his class schedule and any problems he might have in fullfilling his academic responsibilities. A

report of class performance is on file in the directors office on each student (compiled by the director interviewing each student's instructors) and they will be used as the basis for assigning tutors, adding or removing courses, and to show the student that the department is concerned about his academic performance.

(b) Personal counseling: the office of the director of Special Studies is always open to students and each one is encouraged to come in for whatever reason. Each student is advised that he can call on the director, day or night, whenever problems might arise. However, no formal counseling on personal activities have been planned for the students in this program.

VII. FUNDING

Seed grant funds are needed at this time to study and research existing programs at other institutions with the desire that this program might learn from their successes and failures. This, of course, would mean visiting some of the colleges that are engaged in similar activities in and out of Illinois.

These funds would also be used to provide much needed secretarial help, stenographic services, and miscellaneous expenses occurred during the course of the study.

VIII. BUDGET

Travel (including meals)	$150.00
Secretarial help	150.00
Stenographic Services	50.00
Student help and miscellaneous expenses.....	150.00
	$500.00

GRANT NUMBER XXIV

FINAL REPORT

FOR PLANNING A SPECIAL STUDIES PROGRAM

Karl C. Helms

September, 1970

1066

GENERAL STATEMENT

The Department of Special Studies was created in 1969 to aid the intellectual development of minority students (primarily in Illinois) and to create a plan to determine an effective criterion for the selection of these students with a minimum of risk to both the student and the institution.

In the fall of 1969 four students were selected for the program with an additional three students admitted at the beginning of the spring term 1969-70. None of these students was lost to the program due to poor grades at the end of the 1969-70 academic year. The program expects a total enrollment of thirteen for the beginning of the 1970-71 academic year.

This report constitutes the planning outline for the Special Studies Program for the 1970-71 school year.

RECRUITMENT

The main source of recruitment potential lies with the student currently enrolled at Knox College. With this fact in mind, the Department of Special Studies has allocated $150.00 for the transportation and expenses of three students currently enrolled in the program to visit high schools and other agencies that might concern themselves with young people throughout the state. The three students will undergo an orientation program to acquaint them with recruitment, admissions, counseling and financial aid procedures. Upon completion of an institutional visitation reports will be filed with the Director of the Special Studies Program to attempt to ascertain the effectiveness of this recruitment procedure. These reports should contain the following information:

1. Name and location of institution
2. Name and address of individual prospectives
3. Number of individuals contacted
4. Other pertinent material that might be useful in assessing the academic quality of the students contacted.

TUTORIAL ASSISTANCE

During the second week of the 1970-71 academic year the Department of Special Studies will interview students who might be interested in assisting other students in particular academic areas. These tutoring students will be asked to participate on a voluntary basis. The kinds

and amount of tutorial assistance will be based on the individual needs of the student. The kinds of information needed would be:

1. the instructors name and course
2. the specific nature of the students problem (s)
3. the amount of time the instructor could spend aiding the student.
4. the students particular academic standing in the class before and after concentrated tutorial assistance was provided
5. the grade the student earned at the end of the term

TESTING

In conjuction with the clinical Psychologist, Dr. Isaacson, a series of examinations will be given to each student entering the Special Studies Program. These tests will be used to show the area (s) in which the students are weak and to help determine effective criteria for the eventual selection of students for the Special Studies Program. The test to be used will be the Strong Vocational Interest Test, The Motivation Analysis Test (MAT) and the Davis Reading Test (see the section on the Reading Center).

COUNSELING

All students in the Special Studies Program will be advised and counseled by the director of the program with the advice of the director of the reading center and the college's clinical Psychologist. Each

student will meet with the director at least three times each term to discuss his class schedule and any problems he might have in fulfilling his academic responsibilities. These counseling sessions are intended for both personal and academic counseling.

READING CENTER

We propose to establish a counselor-tutor program which would provide the Special Studies students with course related study aids. During the spring term, 1969-70, Mrs. Helms attended one regular class in which the Special Studies students were enrolled. From class attendance and from study of assignments and materials, she developed a program of tutoring directly related to the class. In addition, she included general study aids, applicable to any course the students might take while at Knox (organizing lecture notes and coordinating them with text assignments, using the Seymour Library, creating study sessions with other students, for example). A competent Knox student, preferably a junior or senior, can organize and carry out such a program with the advice of a faculty counselor. Four students per student counselor would be optimum. This low ratio remains mandatory because the tutor will need to aid each student in particular aspects of study as diverse and time consuming as budgeting time or determining the main ideas in textual material.

For the fall term, 1970, then, we propose to use two tutor counselors for the eight incoming Special Studies students. These counselors will

work with Mes. Helms and report to the Director of the program.

We plan to institute a program of testing in an attempt to measure the Special Studies students' growth in language skills. The Davis Reading Test offers opportunities to compare our Special Studies population with 7000 college freshmen (as well as with as many thousand high school juniors and seniors) in reading comprehension skills. The instrument allows for follow-up testing; four comparable forms of the test are available. We propose to test the Special Studies students three times--fall term of their freshman year, fall term of their sophomore year, and fall term of their senior year. In order to compare their skills locally, we propose to test twenty randomly selected Knox freshmen who are regularly admitted using the same testing schedule as for the Special Studies group. In this way we can not only plot growth in language skills, but perhaps predict more clearly the amount of growth a Special Studies student needs to make in order to be a successful Knox student.

EVALUATION

At the end of each academic term the director of the Special Studies Program and the director of the Reading Center will submit to Knox College a written evaluation of the entire Special Studies Program. This report will assess the effectiveness of all of the items listed above. The Special Studies Committee, along with the director of the program will meet each term to analyze the results of the above mentioned areas and prepare a report on their findings.

GRANT NUMBER XXV

SEED GRANT PROPOSAL

FOR

TUTORIAL MODE OF INSTRUCTION IN PHYSICS EDUCATION ON THE IBM 1130

Submitted by

John W. Boyd
Knox College

1072

1073

A PROPOSAL FOR IMPLEMENTING THE USE OF COMPUTERS IN INSTRUCTION

A program to facilitate the use of computers in instruction in a small liberal-arts college has been undertaken. It is proposed that in this phase of the project the use of the computer in the author-controlled tutorial mode will be implemented on an IBM 1130. In this mode, the author prepares a multi-branched programmed learning text or lesson; then the lesson is processed by and stored in the computer to be used at a later time by a student. When the student uses the lesson, the computer presents the material to the student, records his responses, and controls the branching within the lesson.

In order for the system to be useful, there are a number of requirements it must satisfy. Some of them are:

1) the format for the text must be as natural as possible with a minimum of arbitrarily adopted rules;

2) a sophisticated diagnostic routine must be furnished to aid the instructor in finding and correcting violations of those few rules which have to be adopted;

3) the responses of the students must be made available to the instructor for evaluation of performance of the lesson as well as of the student;

4) the student should have access to more than one lesson;

5) the student should be able to go back and review sections of the lesson;

6) the student should be able to sign off at any point in the lesson;

7) the student should be able to sign back on at any point in the lesson;

8) more than one student should be able to use the same lesson at the same time;

9) when the computer is not actually servicing one of the students it should be available for other use;

10) the system must be able to recognize anticipated responses buried in other text;

11) the system should be able to recognize anticipated numerical responses within tolerance ranges specified by the instructor, and if unspecified, within the roundoff error of the computer;

12) provisions must be made for the situation where none of the anticipated responses is detected;

13) provisions should be made so that if a particular class of response is made by the student, then the instructor has the option of making a statement and re-asking the same question; then if the same class of response is given again to go to the rest of the lesson after making the appropriate statement and

14) when the student needs to do numerical calculations, he should be able to switch to the computational mode and when he is finished, be able to switch back to the conversational mode.

John W. Boyd

GRANT NUMBER XXV

FINAL REPORT

TUTORIAL MODE OF INSTRUCTION IN PHYSICS EDUCATION ON THE IBM 1130

John W. Boyd

September, 1970

1074

When creating the system to implement the author-controlled tutorial mode of computer usage, there were two principles always kept in mind. The primary one was to make the task of preparing the lesson material as easy and natural as possible for the instructor. Secondly, while a student is doing a lesson, the system should execute quickly and use a minimium of space in the computer both for the working program and the bulk storage.

Figure 1 is a flow diagram for a sample problem. (This problem was adapted from one written by Arnold Arons[1].) The text to be presented to the student is enclosed in boxes. Anticipated student responses are encircled. Unanticipated responses are symbolized by "anything else". It is important that an "anything else" response be included with each set of anticipated responses. The connecting lines show all the possible paths the student might take, depending on his responses. When the instructor submits his lesson, arbitrary numbers are added as in figure 2. The keypunch operator uses this flowchart to punch the lesson on cards, as in figure 3. Note here that the flow is now represented by numbers instead of lines. The R designates an anticipated student response. Student responses which require the same comment are on the same line, separated by commas.

A format for storage of the lesson was devised to provide fast execution and compact storage. The text of each box was preceded by an ID, which gave, among other things, the location in storage of the next box to be executed. A subprogram, named LESON, controls the execution of the lesson. When the student indicates he wishes to type a response (by an interrupt request), control is transferred to LESON. A self explanatory simplified flow diagram of LESON is shown in figure 4. Note that such details as how to sign on and sign off are omitted.

With the formats for the instructor and the computer specified, and the program written to control the execution of the lesson, there remained only one task, that of writting the program to convert the lesson from the instructor's format to LESON's format. This was a large task but was completed and given the name CMPIL, for compile.

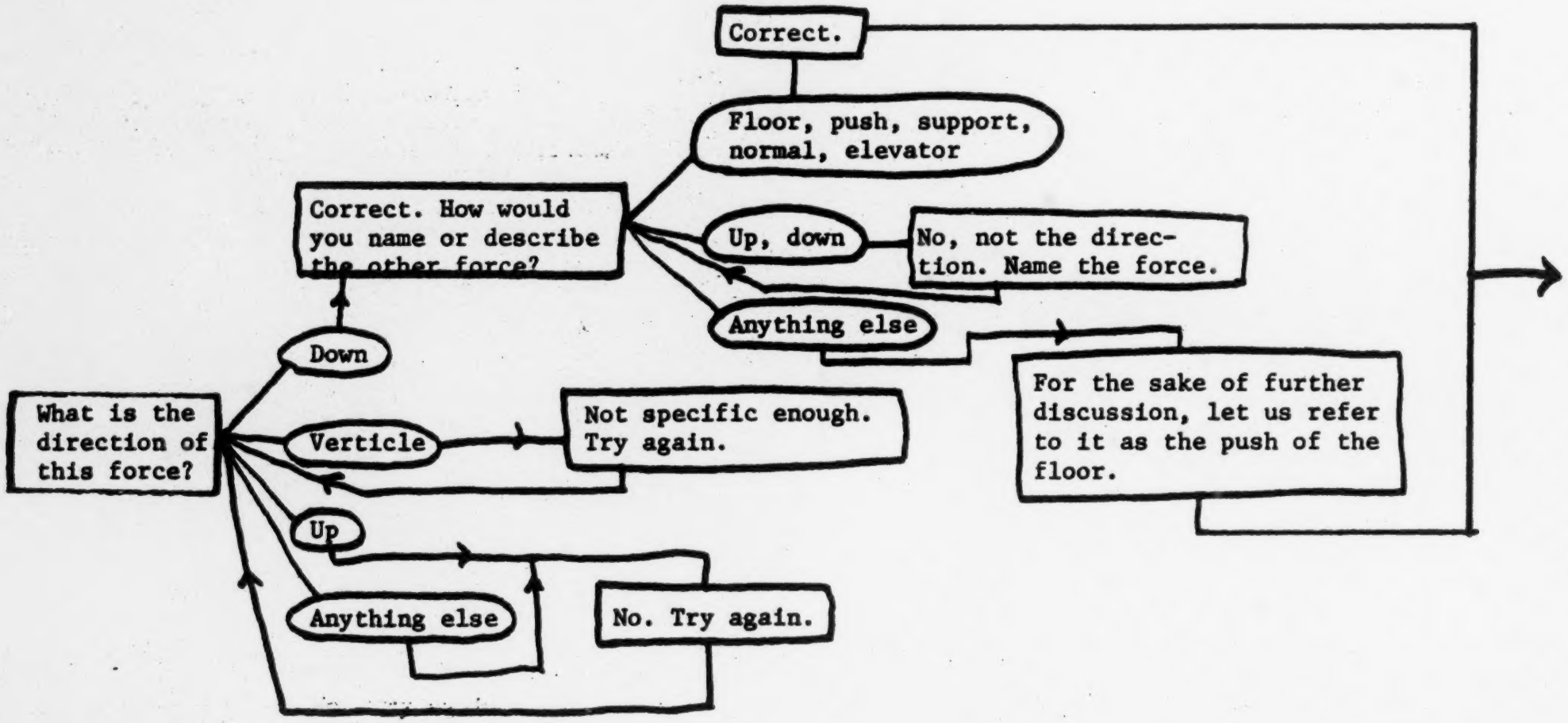
The system has been checked out and satisfies most of the objectives stated in the proposal. There is one, and to be sure severe, limitation on the system as it now stands. It is not compatible with other jobs using the Fortran compiler, the disk utility programs or Fortran programs using common storage. Future work on the monitor system of the computer should correct this deficiency.

Three trial lessons have been used with the system - two in beginning physics and one in classroom statistics for teacher education. If the students' comments can be taken at face value, then the system is a success.

The task ahead is that of preparing suitable textual material.

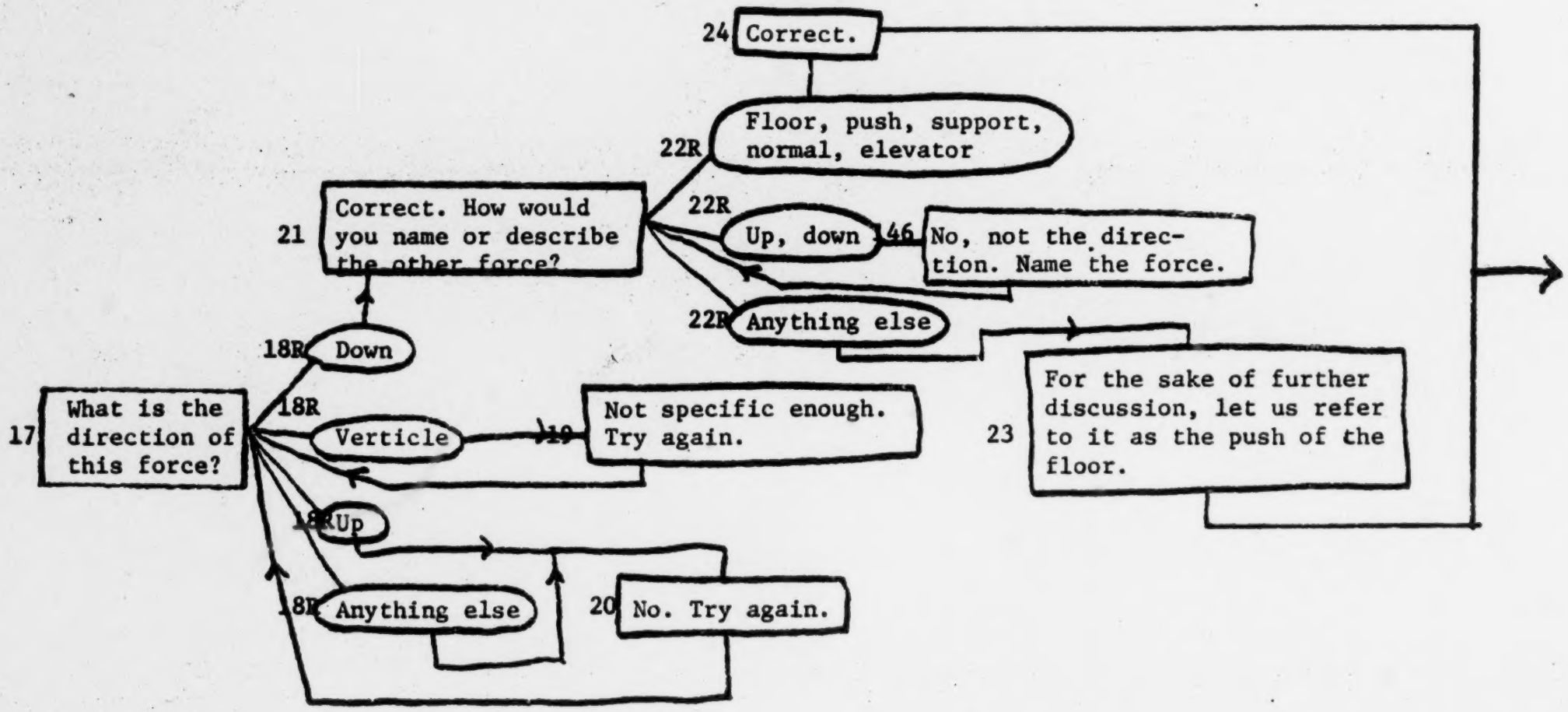
A listing of all the programs written is included.

1. The Computer In Physics Education, published by the Commission on College Physics.



Portion of sample lesson

Figure 1



Portion of sample lesson with numbers

Figure 2

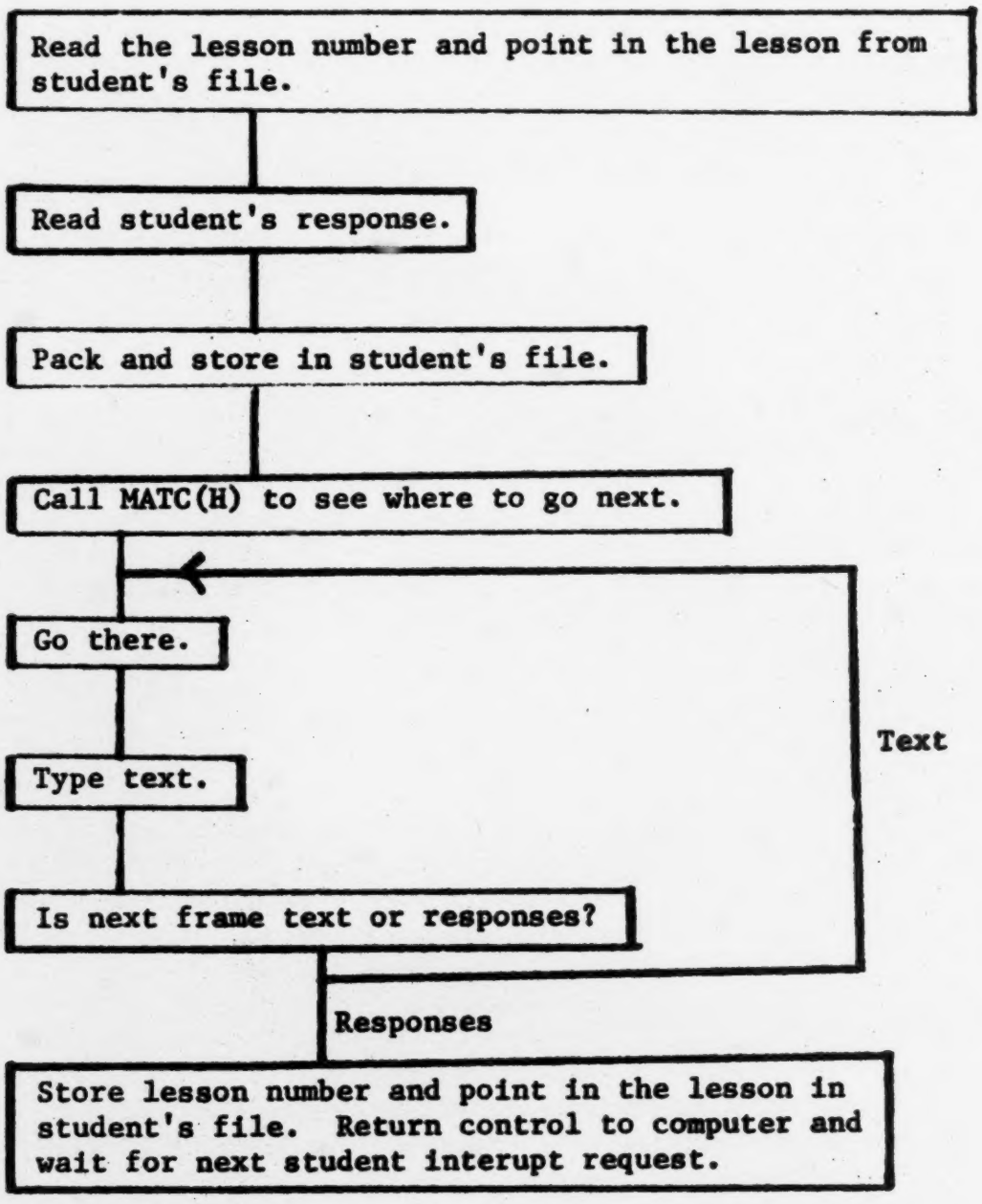
1077

```
17    WHAT IS THE DIRECTION OF THIS FORCE  (PLEASE USE JUST ONE WORD IN  YOU
17    R ANSWER.)                                                          18R
18R   UP                                                                  20
18R   VERTICAL                                                            19
18R   DOWN                                                                21
18R                                                                       20
19    NOT SPECIFIC ENOUGH. TRY AGAIN.                                     18R
20    NO. TRY AGAIN                                                       18R
21    CORRECT. HOW WOULD YOU NAME OR DESCRIBE THE OTHER FORCE             22R
22R                                                                       23
22R   FLOOR, PUSH, SUPPORT, NORMAL, ELEVATOR                              24
22R   UP, DOWN                                                            146
146   NO, NOT THE DIRECTION. NAME THE FORCE.                              22R
23    FOR THE SAKE OF FURTHER DISCUSSION, LET US REFER TO IT AS 'THE PUSH  O
23    F THE FLOOR.'                                                       25
24    CORRECT.                                                            25
```

Portion of sample lesson from cards

FIGURE 3

LESON



Simplified flow chart of LESON

Figure 4

Listing of programs

```
// DUP
*DELETE                CMPIL      0002
// FOR
* IOCS(DISK,1403 PRINTER)
* LIST ALL
* ONE WORD INTEGERS
      DEFINE FILE 99 ( 960,1,U,N99N)
      DEFINE FILE  1(6400,1,U,NLFN),  2(6400,1,U,NLFN),3(6400,1,U,NLFN)
      DEFINE FILE  4(6400,1,U,NLFN),  5(6400,1,U,NLFN)
      DEFINE FILE 6(9600,1,U,NLFN)
      DIMENSION IN(80), MAP(200,2), ITFRN(5), ITXT( 70),INFRN(5),
     1                 IRSTX(70),IBUF(240)
      EQUIVALENCE (IN(1),ITFRN(1)),(IN(6),ITXT(1)),(IN(76),INFRN(1))
      DATA IBLK/' '/,ICM/',',/
999   ICNSW=2
C MAXIMUM NUMBER OF LESSON FILES = MXLFN
      MXLFN=6
      IRSW=2
      M=1
      IUCSW=2
      READ(99'1)IPROB
      IF (IPROB) 1021,1021,1022
1021  N99N=6
      CALL STOIN (N99N,K)
      I=3
      N99N2=N99N
      WRITE (99'2)N99N2,I,K
      DO 1011 I=1,5
      N99N=N99N2+1
      CALL STOIN (N99N,K)
      J=N99N
      WRITE(99'N99N2)K
1011  N99N2= J
      WRITE (99'5) N99N2
      N99N=N99N2+1
      CALL STOIN (N99N,K)
      WRITE(99'N99N2)K
1022  CALL DATSW(0,I)
      GO TO (1031,1032),I
1031  DO 1033 LF=1,MXLFN
      CALL DATSW(LF,J)
      GO TO (1034,1033),J
1033  CONTINUE
      GO TO 1032
1034  READ(LF'1)I
      IF(I-2)1035,1023,1035
1035  PAUSE 77
      CALL DATSW(LF,I)
      GO TO (1036,1031),I
1036  CALL DATSW(0,I)
      GO TO (1041,1032),I
1032  DO 1037 LF=1,IPROB
      READ(LF'1)I
      IF (I-2)1037,1038,1037
1037  CONTINUE
      LF=IPROB+1
1038  IF(MXLFN-LF)1039,1023,1023
1039  WRITE(5,1040)
1040  FORMAT('0  ERROR, NO MORE LESSON FILES AVAILABLE.')
```

```
      GO TO 998
1041  WRITE(LF'1)ICNSW
1023  NLFN=3


1000  CALL READ (IN,80,ILCSW)
      CALL FRNBR (ITFRN, JTFRN, IXOSW,IBLSW,1,5)
      GO TO (1002,1008,1006,1006), IBLSW
1002  DO 1003 I=6,80
      IF (IN(I)-IBLK) 1004,1003,1004
1003  CONTINUE
      GO TO 1000
1004   WRITE (5,1005)IN
1005  FORMAT ('0 ERROR, NO FRAME NUMBER, CARD READS', 80A1)
      GO TO 998
1006  WRITE (5,1007) JTFRN
1007  FORMAT ('0 ERROR, ILLEGAL CHARACTER IN FRAME NUMBER',I5,'.')
      GO TO 998
1008  GO TO (1001,1006,1006),IXOSW
1001  CALL FRNBR (INFRN,JNFRN,IXOSW,IBLSW,1,5)
      GO TO (400,400,1009,1009),IBLSW
1009  WRITE (5,1010)JTFRN
1010  FORMAT ('0 ERROR, ILLEGAL CHARACTER IN ADDRESS IN FRAME NUMBER',
     1I5,'.')
      GO TO 998


400   GO TO (401,402),ICNSW
402   IF(JTFRN)403,1004,404
403   GO TO (405,300,1009,1009),IBLSW
405   JTFRN=-JTFRN
      WRITE (5,406)JTFRN
406   FORMAT ('0 ERROR, R FRAME WITH NO ADDRESS IN FRAME NUMBER',I5,
     1'.')
      GO TO 998
404   IF (IN(75)-IBLK)407,408,407
408   IBSW=1
      GO TO 409
407   IBSW=2
409   NLFNS=NLFN
      NLFN=NLFN+4
      ISCDC=1
      ISFRN=JTFRN
      IEND=70
      DO 415 I=1,70
415   IBUF(I)=ITXT(I)
      GO TO (410,411,1009,1009),IBLSW
410   ICNSW=1
      GO TO 1000
401   IF (JTFRN-ISFRN)412,414,412
412   WRITE (5,413) JTFRN
413   FORMAT ('0 ERROR, CONTINUATION CARD NOT THE SAME FRAME AS LAST
     1CARD IN FRAME NUMBER',I5,'.')
      GO TO 998
414   ISCDC=ISCDC+1
      IF (IEND -170) 429,429,430
429   DO 416 I=1,70
      J=IEND+I
416   IBUF(J      )=ITXT(I)
```

1082

```
      IF (ITXT(1)-IBLK)417,422,417
422   IB=IEND+1
      GO TO 420
417   GO TO (418,419),IBSW
418   IB=IEND
      GO TO 420
419   DO 421 I=1,IEND
      IB=IEND-I
      IF(IBUF(IB     )-IBLK)421,420,421
421   CONTINUE
      IB=0
420   NCRTR=IB-1
      IF(ITXT(70)-IBLK)423,424,423
423   IBSW=2
      GO TO 425
424   IBSW=1
425   CALL PRSTX(IBUF,NCRTR)
      IF (NCRTR)432,432,433
432   NCRTR=1
      IBUF(1)=IBLK
433   WRITE(LF'NLFN)NCRTR,(IBUF(I),I=1,NCRTR)
      GO TO (426,500),ICNSW
426   IEND=IEND-IB+70
      DO 427 I=1,IEND
      J=IB+I
427   IBUF(I)=IBUF(J)
      GO TO (1000,428,1009,1009),IBLSW
428   ICNSW=2
411   NCRTR=IEND
      IBUF(IEND+1)=IBLK
      GO TO 425
430   WRITE(5,431)ISFRN
431   FORMAT('0 ERROR, HYPHENATED WORDS EXCEED BUFFER OF 100 IN FRAME
     1NUMBER'I5,'.')
      GO TO 998


300   GO TO (301,302),IRSW
301   IF (IRFRN+JTFRN)303,200,303
303   WRITE (5,304)IRFRN
304   FORMAT ('0 ERROR, CONSECUTIVE RESPONSES NOT THE SAME FRAME IN
     1FRAME NUMBER',I5,'.')
      GO TO 998
302   IRSW=1
      IRFRN=-JTFRN
      ITBSW=2
      IRCNT=0
      MAP(M,1)=IRFRN
      MAP(M,2)=NLFN
      M=M+1
      NLFN2=NLFN+1
      WRITE (LF'NLFN)IRFRN
      NLFN=NLFN+2
      I=NLFN+1
      WRITE (LF'NLFN)I
      GO TO 200
```

```
200     ILTSW=2
        ICMSW=2
        IRCSW=2
        N=0
        DO 212 I=1,70
212     IRSTX(I)=IBLK
        DO 213 I=1,70
        IF (ITXT(I)-IBLK)216,213,216
216     IF (ITXT(I)-ICM) 226,218,226
226     IF(ITXT(I)-31552)219,227,219
227     IRCSW=1
        GO TO 213
219     N=N+1
        IRSTX(N)=ITXT(I)
        GO TO 213
218     ICMSW=1
223     NCRTR=70

        GO TO (228,229),IRCSW
228     CALL PRSNB(IRSTX,       N)
        NCRTR=5
        GO TO 230
229     CALL PRSTX (IRSTX, NCRTR)
230     IF (IXOSW-1)209,209,210
209     IF (NCRTR)202,224,202
201     GO TO (203,204),ITBSW
203     WRITE(5,205)IRFRN
205     FORMAT ('0 ERROR, TWO BLANK RESPONSES IN FRAME NUMBER',I5,'.'
        GO TO 998
204     ITBSW=1
        IF(JNFRN)206,405,207
207     JNFRN=JNFRN+3
        NLFNS=NLFN
        WRITE(LF'NLFN2)JNFRN
        NLFN=NLFNS
        GO TO 1000
206     WRITE (5,208) IRFRN
208     FORMAT ('0 ERROR, NO REPLY TO BLANK RESPONSE IN FRAME NUMBER'
       1'.')
        GO TO 998
202     IRCNT=IRCNT+1
        IF (JNFRN)214,405,215
214     JNFRN=-JNFRN
215     WRITE(LF'NLFN)JNFRN, NCRTR,(IRSTX(J),J=1,NCRTR)
        DO 217 J=1,N
217     IRSTX(J)=IBLK
        N=0
        GO TO (1000,213),ILTSW
213     CONTINUE
        IF (N)222,221,222
221     GO TO (1000,201),ICMSW
222     ILTSW=1
        GO TO 223
210     WRITE (5,211)IRFRN
211     FORMAT ('0 ERROR, EXIT OR OFF  FOLLOWING R FRAME NUMBER',I5,'
998     CALL DATSW (14,J)
        GO TO (997,996),J
997     PAUSE 5555
```

```
      GO TO 999
996   CALL EXIT
224   WRITE (5,225)IRFRN
225   FORMAT('0 ERROR TWO CONSECUTIVE COMMAS IN FRAME NUMBER',I5,'.')
      GO TO 998


500   NLFNT=NLFN
      GO TO (501,510),IRSW
501   GO TO (503,504),ITBSW
504   WRITE (5,505)IRFRN
505   FORMAT ('0 ERROR, NO BLANK RESPONSE IN FRAME NUMBER',I5,'.')
      GO TO 998
503   IRSW=2
      NLFN3=NLFN2+1
      WRITE (LF'NLFN3)IRCNT
510   GO TO(507,509,509),IXOSW
507   IF(JNFRN)506,405,508
506   ID2=2
      JNFRN=-JNFRN
      GO TO 502
508   ID2=1
      GO TO 502
509   ID2=3
502   MAP(M,1)=ISFRN
      MAP(M,2)=NLFNS
      M=M+1
      WRITE(LF'NLFNS)ISFRN,ID2,ISCDC,JNFRN
      NLFN=NLFNT
      GO TO (1000,600,1000),IXOSW



600   M=M-1
      DO 601 I=1,M
      J=M-I+1
      JJ=J-1
      DO 601 K=1,JJ
      IF(MAP(K,1)-MAP(J,1)) 601,601,602
602   MAP1=MAP(J,1)
      MAP2=MAP(J,2)
      MAP(J,1)=MAP(K,1)
      MAP(J,2)=MAP(K,2)
      MAP(K,1)=MAP1
      MAP(K,2)=MAP2
601   CONTINUE
      K=M-1
      DO 650 I=1,K
      IF (MAP(I,1)-MAP(I+1,1)) 650,651,651
651   WRITE (5,652) MAP(I,1)
652   FORMAT ('0ERROR, TWO STATEMENTS IDENTIFIED BY FRAME NUMBER',I5,
     1'.')
      GO TO 998
650   CONTINUE
      CALL DATSW(13,N)
      GO TO (801,802),N
801   WRITE (5,800)((MAP(I,J),J=1,2),I=1,M)
```

```
800   FORMAT (' ',10(I4,2X,I5))
802   CONTINUE
      WRITE(LF'NLFN) ((MAP(I,J),J=1,2),I=1,M)
      NUFNL=NLFN-1
      NUFN=3
      MN=1
606   IF (NLFN-NLFNS) 605,700,700
605   READ (LF'NLFN)ID1,ID2,ID3,JNFRN
      GO TO (803,804),N
803   WRITE (5,800) ID1,ID2,ID3,JNFRN
804   CONTINUE
      IUSW=1
      IDSW=1
      IF (ID2-3)627,627,609
627   GO TO (607,607,626),ID2
607   IF(MAP(MN,1)-JNFRN)681,621,682
681   GO TO (680,620,624),IUSW
680   IUSW=2
      IDSW=3
620   MN=MN+1
      IF(MN-M)607,607,624
624   WRITE(5,625)ID1
625   FORMAT('0 ERROR  ADDRESS OF NEXT FRAME DOES NOT CORRESPOND TO ANY
     1LISTED FOR FRAME NUMBER',I5)
      GO TO 998
682   GO TO (684,622,624),IDSW
684   IUSW=3
      IDSW=2
622   MN=MN-1
      IF(MN)624,624,607
621   NUFN=NLFN-1
      WRITE (LF'NLFN) MAP(MN,2)
626   DO 604 I=1,ID3
      READ (LF'NLFN)NCRTR
604   NUFN=NLFN+NCRTR
      GO TO 606
609   JNFRN=ID2-3
608   IF(MAP(MN,1)-JNFRN)671,612,672
671   GO TO (670,630,624),IUSW
670   IUSW=2
      IDSW=3
630   MN=MN+1
      IF(MN-M)608,608,624
672   GO TO (674,632,624),IDSW
674   IUSW=3
      IDSW=2
632   MN=MN-1
      IF(MN)624,624,608
612   NUFN=NLFN-3
      WRITE (LF'NLFN)MAP(MN,2)
      NUFN=NLFN+2
      DO 617 J=1,ID3
      IDSW=1
      IUSW=1
      READ (LF'NLFN)JNFRN,NCRTR
616   IF(MAP(MN,1)-JNFRN) 661,613,662
661   GO TO (660,640,624),IUSW
660   IUSW=2
      IDSW=3
```

```
640     MN=MN+1
        IF(MN-M)616,616,624
662     GO TO (664,642,624),IDSW
664     IUSW=3
        IDSW=2
642     MN=MN-1
        IF(MN)624,624,616
613     NURN=NLFN-2
        WRITE (LF'NLFN)MAP(MN,2)
617     NUFN=NLFN+NCRTR+1
        GO TO 606
700     WRITE(LF'1)NLFNT,NLFNL
        IF (IPROB-LF)703,704,704
703     IPROB=LF
        WRITE (99'1) IPROB
704     READ(LF'7)NCRTR,(IN(I),I=1,NCRTR)
        WRITE(5,705)(IN(I),I=1,NCRTR)
        WRITE(5,706)LF,NLFNL
705     FORMAT('0'10X,35A2)
706     FORMAT(11X,'COMPILED IN LESSON FILE NUMBER 'I2,' USING 'I5,' RECOR
       1DS.')
        CALL DATSW(15,I)
        GO TO (701,702),I
701     PAUSE 15
        CALL DATSW(15,I)
        GO TO (999,702),I
702     CALL EXIT
        END
// DUP
*STORE        WS  UA  CMPIL      0002  0002

+00385
```

```
// DUP
*DELETE                LESON      0002
// FOR
* ONE WORD INTEGERS
* LIST ALL
*IOCS(DISK)
      INTEGER SF
      DEFINE FILE 101(3200,1,U,NSF ),  102(3200,1,U,NSF )
      DEFINE FILE 103(3200,1,U,NSF ),  104(3200,1,U,NSF )
      DEFINE FILE  1(6400,1,U,NLF ),  2(6400,1,U,NLF ),3(6400,1,U,NLF )
      DEFINE FILE  4(6400,1,U,NLF ),  5(6400,1,U,NLF )
      DEFINE FILE 6(9600,1,U,NLF )
      DEFINE FILE 99 ( 960,1,U,N99 )
      DIMENSION ID(4), LINE(36),IN(70)
      EQUIVALENCE (ID(1),ID1), (ID(2),ID2), (ID(3),ID3), (ID(4),ID4)
      DATA IBLK/' '/,IDLAR/'$'/
214   SF=101
      READ (SF'1)LF,NSFN,ID
      IF (LF) 201,200,201
200   CALL SNON (LF,NLFN,SF,NSFN)
      GO TO 205
201   FIND (SF'NSFN)
      CALL TYPE (IN,70)
      DO 209 K=1,70
      I=71-K
      IF (IN(I)-IBLK)210,209,210
209   CONTINUE
210   IN(I)=IBLK
      NCRTR=I-1
      IF(NCRTR)213,212,213
213   CALL PACK(IN,1,NCRTR,LINE,1)
      I=I/2
212   JJ=32767
      WRITE (SF'NSFN   ) ID(1),I     ,(LINE(J),J=1,I),JJ
      NSFN=NSFN+I+2
      NLFN=ID(4)
      CALL MATC (ID2,ID3,LF,NLFN,IN,NCRTR)
      IF(IN(1)-IDLAR)205,201,205
205   READ(LF'NLFN)ID
208   NLFN=NLFN+4
       IN (1)=13632
      DO 206 I=1,ID3
      READ(LF'NLFN )NCRTR,( IN (J+1),J=1,NCRTR)
      NLFN=NLFN+1+NCRTR
      FIND(LF'NLFN)
206   CALL TYWR( IN ,1,NCRTR+1)
      NLFN=ID(4)
      GO TO (211,211,204),ID2
211   ID2S=ID2
      READ(LF'NLFN ) ID
      GO TO (208,202,204),ID2S
204   CALL SNOFF(SF,NSFN)
      GO TO 214
202   WRITE (SF'1)LF,NSFN,ID
207   CALL SHARB
      GO TO 201
      END
// DUP
*STORECI    WS  UA  LESON    20002  0002
```

```
*FILES(1,NLF1),(2,NLF2),(3,NLF3),(4,NLF4),(5,NLF5),(99,N99N),(6,NLF6)
*FILES(101,NSF1)

+00062
```

```
// DUP
*DELETE                SNON        0002
// FOR
* LIST ALL
* ONE WORD INTEGERS
      SUBROUTINE SNON(LF,NLFN,SF,NSFN)
      INTEGER SF
      DIMENSION          LINE(36), NAME(70)
      DATA IBLK/' '/,JN/'N'/,JO/'O'/
      II=32767
      WRITE (SF'NSFN)II
       NSFN=NSFN+1
      READ (99'1)IPROB,N99N
      READ (99'N99N)NLNS
      N99N=N99N+1
      LINE(1)=13632
       DO 302 I=1,NLNS
      READ (99'N99N) NCRTR, (LINE(J+1),J=1,NCRTR)
      N99N=N99N+1+NCRTR
      FIND(99'N99N)
302   CALL TYWR(LINE,1,NCRTR+1)
      CALL TYPE (NAME,70)
      IF(NAME(1)-JN) 327,328,327
328   IF(NAME(2)-JO)327,329,327
327   L=1
      GO TO 332
329   L=2
332   READ (99'N99N)NLNS
      N99N=N99N+1
      DO 330I=1,NLNS
      READ (99'N99N)NCRTR,(LINE(J+1),J=1,NCRTR)
      GO TO (333,330),L
333   CALL TYWR (LINE,1,NCRTR+1)
330   N99N=N99N+NCRTR+1
      READ(99'N99N)NLNS
      N99N=N99N+1
      DO 331 I=1,NLNS
      READ (99'N99N) NCRTR,(LINE(J+1),J=1,NCRTR)
      N99N=N99N+NCRTR+1
331   CALL TYWR (LINE,1,NCRTR+1)
      CALL TYPE(NAME,70)
      DO 303 K=1,70
      I=71-K
      IF (NAME(I     )-IBLK ) 304,303,304
303   CONTINUE
304   L=0
      NAME(I)  =IBLK
      IF(I-1)310,310,311
311   CALL PACK(NAME,1,I,NAME,1)
      I=(I+1)/2
310   WRITE(SF'NSFN  ) L,I,(NAME(J),J=1,I)     ,II
      NSFN=NSFN+I+2
      CALL DATSW(0 ,I)
      GO TO (312,313),I
312   DO 314 LF=1,IPROB
      CALL DATSW (LF,K)
      GO TO (322,314),K
314   CONTINUE
313   READ (99'N99N)NLNS
```

```
      N99N=N99N+1
      DO 316 I=1,NLNS
      READ (99'N99N)NCRTR,(LINE(J+1),J=1,NCRTR)
      N99N=N99N+1+NCRTR
316   CALL TYWR (LINE,1,NCRTR+1)
      DO 323LF=1,IPROB
      READ(LF'1)J
      IF (J-2) 336,323,336
336   READ (LF'7 )NCRTR,(LINE(J+1),J=1,NCRTR)
      CALL TYWR(LINE,1,NCRTR+1)
323   CONTINUE
321   CALL TYPE(NAME,70)
      DO 317 K=1,70
      I=71-K
      IF (NAME(I)-IBLK)318,317,318
317   CONTINUE
318   NAME(I)=IBLK
      NCRTR=I-1
      DO 335 LF=1,IPROB
      NLFN=6
      READ(LF'1)J
      IF (J-2) 337,335,337
337   CALL MATC (3,1,LF,NLFN,NAME,NCRTR)
      IF(NLFN-3)334,335,324
335   CONTINUE
      READ (99'N99N )NLNS
      JJ=N99N+1
      DO 326 I=1,NLNS
      READ (99'JJ)NCRTR,(LINE(J+1),J=1,NCRTR)
      JJ=JJ+NCRTR+1
326   CALL TYWR(LINE,1,NCRTR+1)
      GO TO 321
322   READ(LF'1)I
      IF (I-2)324,313,324
324   READ (LF'7)NCRTR,(LINE(J),J=1,NCRTR)
      WRITE (SF'NSFN)L,NCRTR,(LINE(J),J=1,NCRTR),II
      NLFN=3
      NSFN=NSFN+NCRTR+2
334   RETURN
      END
// DUP
*STORE       WS  UA  SNON       0002  0002

+00102
```

```
// DUP
*DELETE              SNOFF      0002
// FOR
* LIST ALL
* ONE WORD INTEGERS
      SUBROUTINE SNOFF (SF,NSFN)
      INTEGER SF
C     TURN OFF SIGN ON SWITCH
C     SAVE NSFN
      I=0
      NSFN=NSFN+1
      WRITE(SF'1)I,NSFN
      CALL DATSW(9,I)
      GO TO (1,2),I
1     RETURN
2     CALL EXIT
      END
// DUP
*STORE       WS  UA  SNOFF      0002  0002

+00020
```

```
// DUP
*DELETE                MATC       0002
// FOR
* LIST ALL
* ONE WORD INTEGERS
      SUBROUTINE MATC (ID2,ID3,LF    ,NLFN,IN,NCRTR)
      DIMENSION  IRSP(70),IN(70),IGOTO(4)
      DIMENSION IH(8)
      DATA IH/ 'H', 'E', 'L', 'P', 'O', 'F', 'F',' '/,IBLK/' '/
      DATA              IGOTO/'G', 'O', 'T', 'O'/
      IF(ID3)  135,134,135
135   FIND (LF'NLFN)
C     SQUEEZE OUT BLANKS
      N=0
      DO 100 I=1,NCRTR
      IF(IN(I)-IBLK )101,100,101
101   N=N+1
      IN(N)=IN(I)
100   CONTINUE
      DO 103 I=1,ID3
      READ (LF    'NLFN)NFRM,NCRTR,(IRSP(J+35),J=1,NCRTR)
      NLFN=NLFN+2+NCRTR
      IF(IRSP(36)-31552)130,131,130
C     NUMERIC RESPONSE
131   CALL NATC(IN,IRSP(36),N,NATCH)
      GO TO (132,103),NATCH
C     WORD RESPONSE
130   NCRT =2*NCRTR
      CALL UNPK(IRSP,1,NCRT ,IRSP, 36)
      IF(IRSP(NCRT)-IBLK)      114,115,114
115   NCRT=NCRT-1
114   M=N+1-NCRT
      IF(ID2-3)118,119,118
119   K=0
      DO 116 L=1,NCRT
      IF(IRSP(L)-IBLK)117,116,117
117   K=K+1
      IRSP(K)=IRSP(L)
116   CONTINUE
      NCRT=K
118   DO 136 K=1,M
      DO 104 L=1,NCRT
      J=K+L-1
      IF(IN(J)-IRSP(L))136,104,136
104   CONTINUE
C     MATCH
132   NLFN=NFRM
      GO TO 140
136   CONTINUE
103   CONTINUE
C     NO MATCH
134   DO 110 I=1,4
      IF (IN(I)-IH(I)) 111,110,111
110   CONTINUE
      GO TO 113
111   DO 112 I=1,4
      IF (IN(I)-IH(I+4)) 109,112,109
112   CONTINUE
113   NLFN=2
```

```
      LF=99
      GO TO 140
109   DO 133 I=1,4
      IF (IN(I)-IGOTO(I))105,133,105
133   CONTINUE
      CALL GOTO (IN,N,LF,NLFN)
      GO TO 140
105   NLFN=ID2
140   RETURN
      END
// DUP
*STORE      WS  UA  MATC      0002  0002

+00072
```

```
// DUP
*DELETE                GOTO        0002
// FOR
*LIST ALL
*ONE WORD INTEGERS
      SUBROUTINE GOTO (IN,N,LF,NLFN)
      DIMENSION IN(70),ITXT(70)
      DATA IDLAR/'$'/
      CALL FRNBR (IN,INNBR,IXOSW,IBLSW,5,N)
      READ(LF'1) NLFN,IEND
      DO 601 NLFN=NLFN,IEND,2
      READ(LF'NLFN)MAP1
      IF(INNBR-MAP1) 601,602,601
602   I=NLFN+1
      READ(LF'I) NLFN
      READ(LF'NLFN+1) I
      IF(I-3)604,604,605
601   CONTINUE
605   READ(99'5) N99N
      READ(99'N99N)NLNS
      N99N=N99N+1
      DO 603 I=1,NLNS
      READ(99'N99N)NCRTR,(ITXT(J+1),J=1,NCRTR)
      N99N=N99N+1+NCRTR
      ITXT(1)=13632
603   CALL TYWR(ITXT,1,NCRTR+1)
      IN(1)=IDLAR
604   RETURN
      END
// DUP
*STORE        WS   UA   GOTO        0002   0002

+00032
```

```
// DUP
*DELETE                NATC        0002
// FOR
*LIST ALL
*ONE WORD INTEGERS
      SUBROUTINE NATC (IN, IRSP, N, NATCH)
      DIMENSION IRSP(70), IN(70)
      DATA IDOT/'.'/
      DATA NINE,NAUHT,IPLUS,MINUS,IE/'9','0','+','-','E'/
      DO 404 I=1,N
      IF(IN(I)-NINE)405,406,407
405   IF (IN(I)-NAUHT) 407,406,406
407   IF(I-N)411,402,402
411   IF(IN(I)-MINUS)408,406,408
408   IF(IN(I)-IDOT) 412,406,412
412   IF(IN(I)-IPLUS)404,409,404
404   CONTINUE
402   NATCH=2
      GO TO 420
409   I=I+1
406   CALL NMRIC (IN,RNNBR,I,N)
      IF (IN(I)-IE)410,402,410
410   CALL MVRI (IRSP(3),RMIN)
      CALL MVRI(IRSP(5),RMAX)
      IF(RMIN-RNNBR) 401,401,402
401   IF(RMAX-RNNBR) 402,403,403
403   NATCH=1
420   RETURN
      END
// DUP
*STORE        WS  UA  NATC        0002  0002

+00032
```

```
// DUP
*DELETE                NMRIC      0002
// FOR
*LIST ALL
*ONE WORD INTEGERS
      SUBROUTINE NMRIC (IN,RNNBR,IBEG,LAST)
      DIMENSION IN(70)
      DATA        MINUS,IEXP,IDOT/     '-','E','.'/
      IDTSW=2
      IEXSW=2
      RNNBR=0.
      IF(IN(IBEG)-MINUS)101,102,101
101   MINSW=2
      ISTRT=IBEG
      GO TO 103
102   MINSW=1
      ISTRT=IBEG+1
103   DO 104 I=IBEG,LAST
      IF(IN(I)-IDOT)105,106,105
106   IDTSW=1
109   IEND=I-1
      GO TO 112
105   IF (IN(I)-IEXP)104,111,104
111   IEXSW=1
      GO TO 109
104   CONTINUE
      IEND=LAST
112   IF (ISTRT-IEND)136,136,135
136   CALL GTNBR(IN,RNNBR,       IBLSW,ISTRT,IEND)
      GO TO (135,139),IBLSW
139   IN(IBEG)=IEXP
      GO TO 122
135   GO TO (115,114),IDTSW
114   J=I
      GO TO 107
115   DO 116 J=I,LAST
      IF(IN(J)-IEXP)116,118,116
118   IEXSW=1
      IEND=J-1
      GO TO 120
116   CONTINUE
      IEND=LAST
120   ISTRT=I+1
      IF (ISTRT-IEND)138,138,107
138   CALL GTNBR(IN,RNBR ,     IBLSW, ISTRT,IEND)
      GO TO (140,139),IBLSW
140   RNNBR=RNNBR+RNBR*(10.**(I-IEND))
107   GO TO (134,125),MINSW
134   RNNBR=-RNNBR
125   GO TO (121,122),IEXSW
121   IF(IN(J+1)-MINUS)123,124,123
123   MINSW=2
      ISTRT=J+1
      GO TO 132
124   MINSW=1
      ISTRT=J+2
132   CALL GTNBR(IN,RNBR ,     IBLSW,ISTRT,LAST)
      GO TO (141,139),IBLSW
141   GO TO (133,137),MINSW
```

```
133    RNBR=-RNBR
137    RNNBR=RNNBR*10.**RNBR
122    RETURN
       END
// DUP
*STORE        WS  UA  NMRIC      0002  0002

*00066
```

```
// DUP
*DELETE                MVRI       0002
// ASM
*LIST ALL
                              ENT      MVRI
                       MVRI   DC       0
                              STX    1 SAV1+1
                              STX    2 SAV2+1
                              LDX   I1 MVRI
                              LD     1 0
                              STO   L  2
                              LD     1 1
                              MDX    1 2
                              STX    1 BACK+1
                              STO   L  1
                              LD     2 0
                              STO    1 0
                              LD     2 1
                              STO    1 1
                       SAV1   LDX   L1 0
                       SAV2   LDX   L2 0
                       BACK   BSC   L  0
                       A      DC       0
                       B      DC       0
                              END
// DUP
*STORE       WS   UA   MVRI       0002  0002

+00028
```

1099

```
// DUP
*DELETE                FRNBR      0002
// FOR
* LIST ALL
* ONE WORD INTEGERS
      SUBROUTINE FRNBR (IN,NBR,IXOSW,IBLSW,ISTRT,IEND)
      DIMENSION IN(5), IDIGT(19)
      DATA IDIGT/'0','1','2','3','4','5','6','7','8','9','R',' ','D',
     1'F','F','E','X','I','T'/
      IXOSW=1
      IBLSW=2
      NBR=0
      K=ISTRT
108   DO 100 I= K,IEND
      DO 101 J=1,12
      IF (IN(I)-IDIGT(J)) 101,102,101
101   CONTINUE
      L=I-1
      DO 103 M=1,3
      LM=L+M
      IF (IN(LM )-IDIGT(M+12)) 112,103,112
103   CONTINUE
      IXOSW=3
      RETURN
102   IF (J-11) 100, 104, 105
105   J=I-ISTRT
      IF(J)106,106,107
106   DO 109 K=ISTRT,IEND
      IF (IN(K)-IDIGT(12))108,109,108
109   CONTINUE
      IBLSW=1
      RETURN
104   IF(NBR)110,111,110
111   IBLSW=3
      GO TO 107
110   NBR=-NBR
      GO TO 107
100   NBR=NBR*10+J-1
107   RETURN
112   DO 113 M=1,4
      LM=L+M
      IF (IN(LM )-IDIGT(M+15)) 114,113,114
113   CONTINUE
      IXOSW=2
      GO TO 107
114   IBLSW=4
      GO TO 107
      END
// DUP
*STORE       WS  UA  FRNBR      0002  0002

*00051
```

```
// DUP
*DELETE                PRSTX      0002
// FOR
* LIST ALL
* ONE WORD INTEGERS
      SUBROUTINE PRSTX (IN, NCRTR)
      DIMENSION IN(70)
      DATA IBLK/' '/
      CALL PACK (IN,1,NCRTR,IN,1)
      N=(NCRTR+1)/2
      DO 100 I=1,N
      NCRTR=N+1-I
      IF (IN(NCRTR)-IBLK) 101,100,101
100   CONTINUE
      NCRTR=0
101   RETURN
      END
// DUP
*STORE       WS  UA  PRSTX      0002  0002


+00021
```

```
// DUP
*DELETE                PRSNB      0002
// FOR
*LIST ALL
*ONE WORD INTEGERS
      SUBROUTINE PRSNB (IRSTX,        N)
      DIMENSION IRSTX(70)
      DATA              ISTAR/'*'/,IPLUS/'+'/
      UNCT=1.E-6
      IPLSW=2
      ISRSW=2
      DO 201 I=1,N
      IF(IRSTX(I)-ISTAR)202,203,202
202   IF(IRSTX(I)-IPLUS) 201,204,201
201   CONTINUE
      IEND=N
      GO TO 205
203   ISRSW=1
      GO TO 206
204   IPLSW=1
206   IEND=I-1
205   CALL NMRIC (IRSTX,RMIN,1,IEND)
      GO TO (207,208),ISRSW
207   I=I+1
      CALL NMRIC(IRSTX,RMAX,I,N)
      GO TO 209
208   GO TO (210,211),IPLSW
210   I=I+2
      CALL NMRIC (IRSTX,UNCRT,I,N)
212   RMAX=RMIN+UNCRT
      RMIN=RMIN-UNCRT
209   RMIN=RMIN-ABS(RMIN)*UNCT
      RMAX=RMAX+ABS(RMAX)*UNCT
      CALL MVRI(RMIN,IRSTX(3))
      CALL MVRI(RMAX,IRSTX(5))
      IRSTX(1)=31552
      RETURN
211   RMAX=RMIN
      GO TO 209
      END
// DUP
*STORE       WS  UA  PRSNB      0002  0002

+00043
```

```
// DUP
*DELETE                STOIN      0002
// FOR
* LIST ALL
* ONE WORD INTEGERS
      SUBROUTINE STOIN (N99N,K)
      DIMENSION IN(80),ITXT(70)
      EQUIVALENCE (IN(6),ITXT(1))
      DATA ISTAR/'*'/
      ILCSW=2
      K=0
14    J=0
      CALL READ (IN,80,ILCSW)
      DO 10 I=1,80
      IF (IN(I)-ISTAR) 10,11,10
11    J=J+1
10    CONTINUE
      IF (J-80) 12,13,12
12    NCRTR=70
      CALL PRSTX (ITXT, NCRTR)
      IF (NCRTR)15,14,15
15    WRITE (99'N99N) NCRTR, (ITXT(J),J=1,NCRTR)
      K=K+1
      GO TO 14
13    RETURN
      END
// DUP
*STORE        WS  UA  STOIN      0002  0002

+00029
```

```
// DUP
*DELETE                GTNBR      0002
// FOR
* ONE WORD INTEGERS
* LIST ALL
      SUBROUTINE GTNBR (IN,RNBR,IBLSW,ISTRT,IEND)
      DIMENSION IN(1),IDIGT(10)
      DATA IDIGT/'0','1','2','3','4','5','6','7','8','9'/
      IBLSW=1
      RNBR=0.
      DO 100 I=ISTRT,IEND
      DO 101 J=1,10
      IF(IN(I)-IDIGT(J)) 101,100,101
101   CONTINUE
      IBLSW=2
      GO TO 102
100   RNBR=RNBR*10.+(J-1)
102   RETURN
      END
// DUP
*STORE       WS  UA  GTNBR      0002  0002

+00022
```

```
// DUP
*DELETE              RDFIL      0002
// FOR
*LIST ALL
* ONE WORD INTEGERS
*IOCS(DISK,1403PRINTER)
      INTEGER SF
      DIMENSION LINE(320)
      DEFINE FILE 101(3200,1,U,NSFN),  102(3200,1,U,NSFN)
      DEFINE FILE 103(3200,1,U,NSFN),  104(3200,1,U,NSFN)
      DATA IBLK/' '/
      MXSFN=1
      DO 102 SF=1,MXSFN
      IF=SF+100
      READ(IF'1)ISNSW,I
      IF(ISNSW)104,101,104
104   WRITE(5,105) SF
105   FORMAT('1       STUDENT FILE NUMBER ',I2,' IS SIGNED ON.')
      GO TO 102
101   IF (I    -6)107,107,106
107   WRITE(5,108)SF
108   FORMAT('1        STUDENT FILE NUMBER ',I2,' IS EMPTY.')
      GO TO 102
106   NSFN=7
7     WRITE (5,11) SF
11    FORMAT('1      FRAME NBR  TEXT',5X,'STUDENT FILE NUMBER ',I2)
5     READ(IF 'NSFN ) ID1
      IF(ID1-32767)1,2,1
1     READ (IF 'NSFN )I,(LINE(J),J=1,I)
      WRITE(5,10) ID1,(LINE(J),J=1,I)
10    FORMAT(10X,I5,2X,35A2)
      GO TO 5
2     READ(IF 'NSFN )I
      IF(I-32767)6,7,6
6     NSFN=1
      DO 103 I=1,320
103   LINE(I)=IBLK
      DO 100 J=1,9
100   WRITE(IF ' NSFN )LINE
      WRITE (IF 'NSFN )(LINE(J),J=1,319)
      I=0
      J=6
      WRITE(IF'1)I,J
102   CONTINUE
      CALL EXIT
      END
// DUP
*STORE       WS  UA  RDFIL      0002  0002

+00049
```

Listing of lessons

```
144   WEIGHTLESSNESS                                                          1
1     A BODY OF MASS M RESTS ON THE FLOOR OF AN ELEVATOR. LET US SUPPOSE AT
1     FIRST THAT THE ENTIRE SYSTEM IS AT REST. HOW MANY FORCES ACT ON THE  B
1     ODY  (TYPE A NUMERAL.)                                                  2R
2R    1                                                                       6
2R    0                                                                       5
2R    0.1                                                                     4
2R                                                                            3
2R    2                                                                       12
6     ONLY ONE  IF ONLY ONE FORCE WERE ACTING ON THE BODY WHAT WOULD HAPPEN
6                                                                             7R
5     IF YOU ARE SAYING THAT THERE IS A ZERO NET FORCE ON THE BODY. YOU ARE
5     OF COURSE CORRECT SINCE IT IS NOT ACCELERATING. BUT WE WISH TO  IDENTI
5     FY SEPARATE FORCES. TRY AGAIN.                                          2R
4     PLEASE DONT USE THE LETTER OH OR EYE. TYPE A NUMERAL.                   2R
3     YOU SEEM TO BE THINKING OF TOO MANY FORCES. TRY AGAIN.                  2R
7R    SPEED UP, CHANGE, INCREASE, ACCELERATE, FASTER AND FASTER               11
7R    REST                                                                    10
7R    MOVE, MOTION                                                            9
7R                                                                            8
11    CORRECT. LETS GO BACK.                                                  1
10    NO. THE BODY HAS A NET FORCE ON IT. WHAT WOULD HAVE TO HAPPEN           7R
9     THIS IS NOT A FULL ANSWER. 'MOTION' INCLUDES THE CASE OF UNIFORM  VELO
9     CITY WHICH IS NOT POSSIBLE WITH A SINGLE FORCE ACTING. WHAT WOULD  REA
9     LLY HAPPEN TO THE BODY                                                  7R
8     WELL, THE BODY WOULD ACCELERATE. LETS GO BACK.                          1
12    CORRECT                                                                 13
13    LETS EXAMINE THESE TWO FORCES. NAME OR DESCRIBE ONE OF THESE FORCES.    14R
14R   WEIGHT, GRAVIT                                                          16
14R   FLOOR, NORMAL, ELEVATOR                                                 139
14R   UP, DOWN                                                                145
14R                                                                           15
145   NO, NOT THE DIRECTION. NAME THE FORCE.                                  14R
15    YOU ARE USING WORDS THAT WE CANNOT RECOGNIZE. RESTATE YOUR ANSWER.      14R
16    CORRECT                                                                 17
17    WHAT IS THE DIRECTION OF THIS FORCE  (PLEASE USE JUST ONE WORD IN  YOU
17    R ANSWER.)                                                              18R
18R   UP                                                                      20
18R   VERTICAL                                                                19
18R   DOWN                                                                    21
18R                                                                           20
19    NOT SPECIFIC ENOUGH. TRY AGAIN.                                         18R
20    NO. TRY AGAIN                                                           18R
21    CORRECT. HOW WOULD YOU NAME OR DESCRIBE THE OTHER FORCE                 22R
22R                                                                           23
22R   FLOOR, PUSH, SUPPORT, NORMAL, ELEVATOR                                  24
22R   UP, DOWN                                                                146
146   NO, NOT THE DIRECTION. NAME THE FORCE.                                  22R
23    FOR THE SAKE OF FURTHER DISCUSSION. LET US REFER TO IT AS 'THE PUSH  O
23    F THE FLOOR.'                                                           25
24    CORRECT.                                                                25
25    WHAT IS THE DIRECTION OF THIS FORCE  (PLEASE USE JUST ONE WORD IN  YOU
25    R ANSWER.)                                                              26R
26R                                                                           27
26R   UP                                                                      28
27    ITS UPWARD                                                              38
28    CORRECT                                                                 30
29    CORRECT. HOW WOULD YOU NAME OR DESCRIBE THE OTHER FORCE                 30R
139   CORRECT                                                                 140
```

```
140   WHAT IS  THE DIRECTION OF THIS FORCE   (PLEASE USE JUST ONE WORD IN
140   YOUR ANSWER.)
141R
141R VERTICAL
141R DOWN
141R UP
142   NOT SPECIFIC ENOUGH.  TRY AGAIN.
143   NO. TRY AGAIN.
30R
30R   FLOOR,NORMAL, ELEVATOR
30R   GRAVIT, WEIGHT
30R   UP, DOWN
147   NO, NOT THE DIRECTION. NAME THE FORCE.
31    THE OTHER FORCE IS GRAVITATIONAL  THE WEIGHT OF THE BODY.
33    REMEMBER WE ARE DESCRIBING FORCES ACTING ON THE BODY. NOT FORCES THE
33    BODY EXERTS ON SOMETHING ELSE. PLEASE TRY AGAIN.
34    CORRECT.
35    WHAT IS THE DIRECTION OF THIS FORCE  (PLEASE USE JUST ONE WORD IN  Y
35    R ANSWER.)
36R
36R   DOWN
32    CORRECT
37    ITS DIRECTION IS DOWNWARD.
38    LET US DENOTE THE WEIGHT OF THE BODY BY MG AND THE UPWARD PUSH OF TH
38    ELEVATOR FLOOR BY N. FIRST DRAW A DIAGRAM SHOWING THE FORCES ACTING
38    N THE BODY.
39    WHAT IS THE RELATION BETWEEN THE MAGNITUDES OF THE TWO FORCES WHEN
39    E ELEVATOR IS AT REST.
40R   NOT, UN,MG N,N MG,MG)N,N)MG,), ,GREATER,LESS
40R
40R   EQUAL, SAME, IDENTICAL, MG=N, N=MG,=
41    CORRECT
42    INCORRECT. REMEMBER THAT THE ELEVATOR IS AT REST. TRY AGAIN.
43    THE OPPOSING FORCES ARE EQUAL IN MAGNITUDE SINCE THE SYSTEM IS NOT
43    CELERATING.
44    NOW LET THE ELEVATOR MOVE UPWARD WITH A UNIFORM VELOCITY.  WHAT IS
44     RELATION BETWEEN THE MAGNITUDES OF THE TWO FORCES
45R   NOT, UN,MG N,N MG,MG)N,N)MG,), ,GREATER,LESS
45R
45R   EQUAL, IDENTICAL, SAME, N=MG, MG=N,=
49    INCORRECT. TRY AGAIN.
46    INCORRECT. WHAT IS THE ACCELERATION OF A BODY MOVING AT UNIFORM  VE
46    ITY
47R
47R   ZERO, 0
48    INCORRECT. YOU WOULD DO WELL TO REVIEW THE DISCUSSION OF NEWTONS  F
48    T LAW AND THE CONCEPT OF FORCE. START THE PROBLEM OVER AFTER HAVING
48    ONE SO. YOU ARE BEING SIGNED OFF.
50    CORRECT. THINK ABOUT WHAT THIS IMPLIES ABOUT THE MAGNITUDES OF THE
50    POSING FORCES SHOWN ON YOUR DIAGRAM.
51    CORRECT.
52    SUPPOSE THE ELEVATOR IS ACCELERATING UPWARD. WHICH IS LARGER  THE
52    NITUDE OF N OR THE MAGNITUDE OF MG  (JUST USE THE APPRORIATE SYMBOL
52    S YOUR ANSWER.)
53R   MG
53R
53R   N
54    NO. THINK OF THE NET FORCE THAT MUST BE ACTING. TRY AGAIN.
55    YOU MUST REALIZE THAT THE BODY IS ACCELERATING AND THAT THE FORCES
```

```
55    E NO LONGER BALANCED.                                                  57
56    CORRECT.                                                               57
57    LETS ADOPT THE CONVENTION THAT THE POSITIVE DIRECTION IS VERTICALLY  U
57    PWARD. IN TERMS OF THE SYMBOLS N AND MG, WHICH WE SHALL REGARD AS THE
57    MAGNITUDES OF THE TWO FORCES, WRITE A GENERAL EXPRESSION FOR THE NET
57    FORCE ACTING ON THE BODY  F(NET)=                                      58R
58R   MG-N                                                                   59
58R                                                                          60
58R   N-MG                                                                   61
59    YOU HAVE THE SIGN WRONG. OBSERVE THE CONVENTION  POSITIVE DIRECTION  U
59    PWARD.                                                                 58R
60    YOU SEEM NOT TO KNOW WHAT TO SAY. THE ALGEBRAIC EXPRESSION FOR THE  NE
60    T FORCE IS N-MG. IF YOU DO NOT UNDERSTAND THIS, SIGN OFF AND REVIEW  T
60    HE TEXT.  OTHERWISE, GIVE  THE CORRECT ANSWER AND CONTINUE.            58R
61    CORRECT.                                                               62
62    LET 'F(NET)' DENOTE THE FORCE AND LET 'A' DENOTE THE ACCELERATION OF
62    THE BODY. WRITE THE EXPRESSION FOR NEWTON'S SECOND LAW USING THESE  SY
62    MBOLS.                                                                 63R
63R   F=MA                                                                   64
63R   MA=F(NET)                                                              65
63R                                                                          66
63R   F(NET)=MA,F(NET)=MA                                                    67
64    YES, EXCEPT THAT WE WISH TO EMPHASIZE THE FACT THAT IT IS THE NET  FOR
64    CE THAT IS EQUAL TO MA F(NET)=MA.                                      68
65    YES, EXCEPT WE USUALLY WRITE IT THE OTHER WAY AROUND.                  68
66    THE SECOND LAW IS F(NET)=MA.                                           68
67    CORRECT.                                                               68
68    NOW APRLY THIS STATEMENT TO THE BODY IN THE ELEVATOR, REPLACING  F(NET
68    )BY THE APPROPRIATE EXPRESSION CONTAINING N AND MG.                    69R
69R                                                                          70
69R   N-MG=MA, MA=N-MG                                                       71
70    IN OUR NOTATION THE CORRECT ANSWER IS N-MG=MA.                         72
71    CORRECT.                                                               72
72    SOLVE THE EQUATION FOR THE ACCELERATION A. (USE THE SYMBOL / FOR  DIVI
72    SION AND USE PARENTHESIS WHERE REQUIRED.                               73R
73R                                                                          77
73R   A=N-MG/M                                                               76
73R   A=N/M-G,            N/M-G                                              74
73R   A=(N-MG)/M                                                             75
73R   (N-MG)/M                                                               74
74    OK, BUT WE PREFER THE COMPLETE FORM, A=(N-MG)/M FOR FUTURE REFERENCE.  78
75    CORRECT.                                                               78
76    WATCH THE NECESSARY PARENTHESIS. TRY AGAIN.                            73R
77    THE CORRECT RELATION IS A=(N-MG)/M. TYPE IT IN PRACTICE.               73R
78    NOW SUPPOSE THAT N IS LARGER THAN MG. WHAT WOULD BE THE ALGEBRAIC  SIG
78    N OF THE ACCELERATION                                                  79R
79R                                                                          80
79R   MINUS, NEGATIVE, -                                                     81
79R   POSITIVE,PLUS,+                                                        83
80    NO. TRY AGAIN.                                                         79R
81    HOW CAN IT BE NEGATIVE  N WAS INDICATED TO BE LARGER THAN MG. TRY  AGA
81    IN.                                                                    79R
83    CORRECT.                                                               84
84    IF THE SIGN OF A IS POSITIVE, IN WHAT DIRECTION (UP OR DOWN) MUST THE
84    ELEVATOR BE ACCELERATING                                               85R
85R   DOWN, POSTIVIE, PLUS, &                                                86
85R                                                                          87
85R   UP                                                                     88
86    REMEMBER OUR SIGN CONVENTION. THIS IS THE ALGEBRAIC SIGN OF A. WHAT  I
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86 S ITS DIRECTION IN SPACE 85R
87 NO. IT MUST BE ACCELERATING UPWARD. THAT IS THE INTERPRETATION OF THE
87 ALGEBRAIC SIGN. 89
88 CORRECT. 89
89 SUPPOSE THAT N IS EQUAL TO MG. MUST THE ELEVATOR BE STANDING STILL 90R
90R 91
90R NO 92
91 NO. 93
92 CORRECT. 93
93 IT MAY BE MOVING EITHER UP OR DOWN WITH UNIFORM VELOCITY. SUPPOSE THA
93 T N IS SMALLER THAN MG. IN WHAT DIRECTION MUST THE ELEVATOR BE ACCELE
93 RATING 94R
94R 95
94R NEGATIVE 96
94R DOWN 97
95 NO. IT MUST BE ACCELERATING DOWNWARD. 98
96 THIS IS THE SIGN OF A. WHAT IS ITS DIRECTION 94R
97 CORRECT 98
98 WHEN N IS LARGER THAN MG (I.E. WHEN THE ELEVATOR IS ACCELERATING UPWA
98 RD). DOES THE VELOCITY OF THE ELEVATOR NECESSARILY HAVE TO BE UPWARD. 99R
99R 101
99R NO 100
100 CORRECT. 102
101 THE VELOCITY DOES NOT NECESSARILY HAVE TO BE UPWARD. 102
102 WHAT MIGHT THE ELEVATOR BE DOING UNDER THESE CIRCUMSTANCES 103R
103R SLOWING DOWN, DECREASING SPEED, DECEL 104
103R 105
104 CORRECT. 106
105 CHECK YOUR ANSWER AGAINST THE FOLLOWING PHRASING THE ELEVATOR MAY BE
105 MOVING DOWNWARD WITH DECREASING SPEED AND IT MIGHT THUS HAVE A DOWNWA
105 RD VELOCITY AND AN UPWARD ACCELERATION. 106
106 IMAGINE THAT YOU ARE YOURSELF THE OBJECT IN THE ELEVATOR. SUPPOSE THA
106 T THE ELEVATOR IS ACCELERATING UPWARD. WHAT FEELING OR SENSATION DO Y
106 OU HAVE UNDER THESE CIRCUMSTANCES (CONSTRUCT YOUR ANSWER TO CONTAIN
106 A REFERENCE TO YOUR SENSE OF YOUR OWN WEIGHT OR HEAVINESS IN COMPARIS
106 ON WITH BEING AT REST.) 107R
107R 108
107R MORE, HEAVIER, INCREASE, GREATER, LARGER,HEAVY 109
108 REMEMBER THAT YOU ARE ACCELERATING UPWARD. YOU WOULD FEEL HEAVIER OR
108 EXPERIENCE A SENSATION OF INCREASED WEIGHT. 110
109 CORRECT. 110
110 NOTE THAT OUR SENSATION OF WEIGHT IS RELATED NOT SO MUCH TO THE PULL
110 OF THE EARTH (MG), WHICH REMAINS CONSTANT, AS IT IS TO THE NORMAL FOR
110 CE N THAT THE FLOOR EXERTS ON US. WHEN N BECOMES LARGER THAN ITS VALU
110 E THEN WE HAVE A SENSATION OF INCREASED WEIGHT. SUPPOSE WE ARE STANDI
110 NG ON A BATHROOM SCALE AS THE ELEVATOR ACCELERATES UPWARD. THE READIN
110 G ON THE SCALE WILL BE THAN THE READING WHEN WE ARE AT REST. TY
110 PE THE MISSING WORD. 111R
111R 112
111R MORE, HEAVIER, INCREASE, GREATER, LARGER, 113
112 THE ANSWER IS LARGER. REMEMBER, IT IS ACCELLERATING UPWARD, AND THE
112 NET FORCE MUST BE UPWARD. 114
113 CORRECT. 114
114 SUPPOSE THAT THE ELEVATOR ACCELERATES DOWNWARD. THE VALUE OF N AND TH
114 E READING ON THE BATHROOM SCALE ARE THAN THE CORRESPONDING VAL
114 UES WHEN WE ARE AT REST TYPE THE MISSING WORD. 115R
115R 116
115R LESS, SMALLER,) 117
116 INCORRECT. TRY AGAIN. 115R

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117  CORRECT.                                                                118
118  SUPPOSE WE MAKE THE DOWNWARD ACCELERATION STILL LARGER. WHAT HAPPENS
118  TO N AND THE READING ON THE SCALE                                       119R
119R                                                                         120
119R LESS, SMALLER, DECREASE,)                                               121
120  NO. PLEASE TRY AGAIN.                                                   119R
121  CORRECT.                                                                122
122  IN THE LIGHT OF THE PRECEDING DISCUSSION, HOW WOULD YOU DESCRIBE YOUR
122  SENSATION OF WEIGHT WHEN YOU ARE ACCELERATING DOWNWARD  (COMPARE IT  W
122  ITH YOUR SENSATION AT REST.)                                            123R
123R LESS, DECREASE, SMALLER, LIGHT,LIGHTER                                  124
123R                                                                         125
124  CORRECT.                                                                126
125  YOU WOULD EXPERIENCE A SENSATION OF DECREASED WEIGHT.                   126
126  WHAT IS THE NUMERICAL VALUE OF N WHEN THE DOWNWARD ACCELERATION IS  EQ
126  UAL TO G  (NOTE THAT AN ACCELERATION EQUAL TO G IMPLIES FREE FALL.)  (
126  GO BACK TO YOUR FORMULA IF NECESSARY.)                                  127R
127R                                                                         128
127R ZERO, 0                                                                 129
128  NO. N MUST BE EQUAL TO ZERO SINCE AN ACCELERATION EQUAL TO G IMPLIES
128  FREE FALL WITH NO OPPOSING FORCES.                                      130
129  CORRECT.                                                                130
130  WHAT WOULD BE THE READING ON THE BATHROOM SCALE IF THE ELEVATOR WERE
130  FALLING FREELY                                                          131R
131R                                                                         132
131R ZERO, 0                                                                 133
132  THE SCALE READING MUST BE ZERO SINCE THE PLATFORM IS NOT EXERTING ANY
132  FORCE ON YOUR BODY.                                                     134
133  CORRECT.                                                                134
134  THESE ARE THE CIRCUMSTANCES UNDER WHICH WE SAY WE EXPERIENCE A  'SENSA
134  TION OF WEIGHTLESSNESS.' OUR WEIGHT (DENOTED BY MG) HAS NOT  DISAPPEAR
134  ED OR CHANGED AT ALL. WHAT IS IT THAT HAS CHANGED                       135R
135R                                                                         136
135R N, UP, NORMAL, FLOOR, PUSH                                              137
136  THE UPWARD FORCE EXERTED ON US BY THE FLOOR HAS CHANGED. WHEN THIS  FO
136  RCE (N) BECOMES ZERO, WE EXPERIENCE A SENSATION OF WEIGHT LESSNESS.     138
137  CORRECT.                                                                138
138  IS IT POSSIBLE FOR A BODY TO BE ACCELERATED DOWNWARD WITH AN  ACCELERA
138  TION OF MAGNITUDE LARGER THAN G  WHAT MUST BE DONE TO MAKE THIS  POSSI
138  BLE  WHAT SENSATION WOULD YOU EXPERIENCE UNDER THESE CIRCUMSTANCES  T
138  AKE THIS QUESTION ON YOUR OWN. THIS IS THE END OF PROBLEM ONE. PLEASE
138  SIGN OFF OR GO TO ANOTHER PROBLEM.                                      EXIT
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172   UNCERTAINTY                                                          1
1     WHAT IS THE ERROR, OR UNCERTAINTY, IN THE SUM Y=(203+-2)+(33+-1)
1     (HERE WE ARE USING+- TO MEAN PLUS OR MINUS.)
1     TO ANSWER THIS, YOU MUST KNOW WHAT X=203+-2 MEANS.  IT MEANS THE VALUE
1      OF X IS NOT CERTAIN.  IT COULD VARY FROM A MINIMUM OF 201 TO A MAXIMU
1     M OF ...... .                                                        2R
2R                                                                         3
2R    205                                                                  4
3     THE MAXIMUM WOULD BE 205                                             5
4     RIGHT                                                                5
5     TURNING THIS AROUND, WE CAN SAY IF WE KNOW THE MINIMUM AND MAXIMUM OF
5     SOME COMPUTED VALUE OF Y, THEN WE CAN DECIDE THE ERROR IN Y.
5     IF Y=(203+-2)+(33+-1), WHAT IS THE MAXIMUM VALUE OF Y                6R
6R                                                                         7
6R    239                                                                  10
7     NO, TRY AGAIN                                                        8R
8R                                                                         9
8R    239                                                                  10
9     NO, STILL NOT RIGHT.  THE MAXIMUM VALUE OF Y, THE SUM, WOULD BE WHEN T
9     HE TWO COMPONENTS ASSUME THEIR MAXIMUM VALUES OF 205 AND 33.  THUS THE
9      MAXIMUM SUM WOULD BE 239.                                           159
10    CORRECT                                                              159
159   NOW, WHAT WOULD THE MINIMUM SUM BE                                   11R
11R                                                                        12
11R   233                                                                  23
23    CORRECT                                                              24
12    THE MINIMUM VALUE OF Y WOULD BE WHEN THE TWO COMPONENTS WERE MINIMUM.
12    WHAT IS THE MINIMUM VALUE OF 203+-2                                  13R
13R                                                                        14
13R   201                                                                  16
16    FINE.                                                                15
14    NO, IT WOULD BE 203-2=201                                            15
15    WHAT IS THE MINIMUM VALUE OF 33+-1                                   17R
17R                                                                        18
17R   THIRTY TWO                                                           29
17R   32                                                                   20
18    NO, IT WOULD BE 33-1=32                                              19
29    PLEASE TYPE A NUMERAL                                                17R
20    CORRECT                                                              19
19    NOW, WHAT IS THE MINIMUM VALUE FOR Y                                 21R
21R                                                                        22
21R   233                                                                  23
22    THE MINIMUM VALUE WOULD BE 201+32=233                                24
24    LOOKING AT THE MAXIMUM VALUE OF Y, 239 AND THE MINIMUM VALUE 233, WHAT
24     IS THE ERROR, OR UNCERTAINTY, IN THE SUM
24    Y=236+-..... .                                                       25R
25R                                                                        26
25R   6                                                                    160
25R   THREE                                                                41
25R   3                                                                    33
160   NO.  NOT THE SPREAD.  THE UNCERTAINTY IS THE MAXIMUM DEVIATION FROM TH
160   E STRAIGHT SUM.  TRY AGAIN.                                          25R
26    NO, TRY AGAIN                                                        27R
27R                                                                        28
27R   THREE                                                                41
27R   3                                                                    33
28    NO, THE MAXIMUM, 239, IS 3 ABOVE THE STRAIGHT SUM, 236.  THE MINIMUM,
28     233, IS 3 BELOW 236.  WHAT NUMBER DESCRIBES HOW MUCH ABOVE OR BELOW T
28    HE VALUE OF Y MAY BE FROM 236                                        30R
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30R                                                                          31
30R  6                                                                       160
30R  THREE                                                                   41
30R  3                                                                       33
31   THE ANSWER IS 3.  Y=236+-3.                                             32
41   CORRECT, BUT AFTER THIS, PLEASE USE NUMERALS IN YOUR ANSWERS.           32
33   CORRECT                                                                 32
32   WOULD YOU LIKE TO TRY ANOTHER QUESTION                                  34R
34R  YES, OK, SURE, I'M GAME,YEP, LET'S GO, YA                               37
34R                                                                          35
34R  NO, NEVER                                                               36
36   OK, YOU ARE SIGNED OFF.                                                 OFF
35   I CAN'T UNDERSTAND YOU, ANSWER YES ARE NO.                              34R
37   GOOD IDEA.  WHAT IS THE UNCERTAINTY IN THE SUM Y=(41+-2)+(351+-5)       38R
38R                                                                          39
38R  7,SEVEN                                                                 48
48   GOOD                                                                    49
39   NO, WHAT IS THE MAXIMUM VALUE FOR Y                                     40R
40R                                                                          42
40R  399                                                                     43
43   CORRECT                                                                 44
42   REMEMBER HOW TO FIND THE MAXIMUM VALUE FOR Y.  IT IS THE VALUE WHEN BO
42   TH COMPONENTS OF THE SUM TAKE ON THEIR MAXIMUM VALUES.
42   THE ANSWER IS 43+356=399.                                               44
44   NOW, WHAT IS THE MINIMUM VALUE FOR Y                                    45R
45R                                                                          46
45R  SIGN OFF                                                                36
45R  385                                                                     156
46   NO, THE MINIMUM VALUE IS 385.  IF YOU DON'T UNDERSTAND HOW I GOT THIS,
46    PLEASE SIGN OFF AND SEE YOUR INSTRUCTOR.  OTHERWISE, TYPE IN THE CORR
46   ECT ANSWER AND CONTINUE.                                                45R
156  CORRECT                                                                 47
47   NOW, THE SUM SHOULD BE WRITTEN AS Y=392+-..... .                        38R
49   HERE IS A DIFFERENT ONE, A SUBTRACTION.  Y=(46+-2)-(16+-2).
49   WHAT IS THE UNCERTAINTY IN Y, THAT IS, Y=30+-..... .                    50R
50R                                                                          52
50R  0, ZERO, NONE                                                           51
50R  4,FOUR                                                                  61
61   THAT'S FINE                                                             62
62   LET'S TRY ONE MORE.  WHAT IS THE UNCERTAINTY IN Y=(72+-1)-(16+-2)       63R
63R                                                                          64
63R  3,THREE                                                                 65
64   WELL, THE ANSWER IS 3.                                                  66
65   THAT'S RIGHT.                                                           66
66   BY THE WAY, IN DOING THE LAST PROBLEM, WHAT WAS YOUR MAXIMUM VALUE
66   FOR Y                                                                   67R
52   WELL, FIRST THINK ABOUT THE LARGEST POSSIBLE VALUE FOR Y. WHAT IS IT    53R
51   THAT'S A GOOD STAB, BUT IT IGNORES ONE THING.  YOU DON'T KNOW IF THE
51   16 IS 18 OR 14 IF THE 46 IS REALLY 48.  THUS THE MAXIMUM VALUE OF THE
51   DIFFERENCE IS WHEN THE NUMBER SUBTRACTED IS LEAST, 48-14=34.            56
53R                                                                          54
53R  30, THIRTY                                                              51
53R  34, THIRTY FOUR                                                         55
55   CORRECT                                                                 56
54   THE MAXIMUM VALUE OF THE DIFFERENCE IS WHEN THE NUMBER SUBTRACTED
54   IS LEAST.  THEN 48-14=34, SO 34 IS THE ANSWER.                          56
56   OK, WHAT IS THE MINIMUM VALUE OF THE DIFFERENCE                         57R
57R                                                                          58
57R  26, TWENTY SIX                                                          59
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57R  SIGN OFF                                                          36
58   NO,IT'S 26.  IF THIS IS CLEAR, TYPE IT IN AND CONTINUE.  IF I'M NOT MA
58   KING SENSE TO YOU, SIGN OFF AND ASK YOUR INSTRUCTOR FOR HELP.     57R
59   NOW YOU'VE GOT IT.                                                60
60   THE DIFFERENCE SHOULD BE WRITTEN Y=30+-..... .                    50R
67R                                                                    68
67R  55, FIFTY FIVE                                                    162
67R  59, FIFTY NINE                                                    76
68   THE MAXIMUM VALUE OF THE DIFFERENCE IS WHEN THE NUMBER SUBTRACTED
68   IS LEAST.  THEN 73-14=59, SO 59 IS THE ANSWER.                    166
163R 53                                                                165
163R SIGN OFF                                                          36
163R                                                                   164
164  NO,IT'S 53.  IF THIS IS CLEAR, TYPE IT IN AND CONTINUE.  IF I'M NOT MA
164  KING SENSE TO YOU, SIGN OFF AND ASK YOUR INSTRUCTOR FOR HELP.     163R
165  NOW YOU'VE GOT IT.                                                69
162  THAT'S A GOOD STAB.  BUT IT IGNORS ONE THING.  YOU DON'T KNOW IF THE
162  16 IS 18 OR 14 IF THE 72 IS REALLY 73.  THUS THE MAXIMUM VALUE OF THE
162  DIFFERENCE IS WHEN THE NUMBER SUBTRACTED IS LEAST, 73-14=59.      166
166  OK, WHAT IS THE MINIMUM VALUE OF THE DIFFERENCE                   163R
69   TRY THIS, AND THINK ABOUT WHAT YOU ARE DOING.  IF Z=(142+-5)-(3+-2),
69   WHAT IS THE MINIMUM VALUE OF Z                                    70R
70R                                                                    71
70R  SIGN OFF                                                          36
70R  132                                                                72
71   NO,IT'S 132. IF THIS IS CLEAR, TYPE IT IN AND CONTINUE.  IF I'M NOT MA
71   KING SENSE TO YOU, SIGN OFF AND ASK YOUR INSTRUCTOR FOR HELP.     70R
72   RIGHT.                                                            73
73   SO WHAT IS THE UNCERTAINTY IN Z                                   74R
74R                                                                    75
74R   7,SEVEN                                                          76
75   NO, IT'S 7.                                                       77
76   CORRECT                                                           77
77   WITH ADDITION UNDER YOUR BELT, DO YOU WANT TO TRY MULTIPLICATION  78R
78R  YES, OK, SURE, I'M GAME,YEP, LET'S GO, YA                         81
78R                                                                    79
78R  NO, NEVER                                                         80
79   I CAN'T UNDERSTAND YOU.  PLEASE SAY YES OR NO.                    78R
80   OK, YOU ARE SIGNED OFF                                            OFF
81   LET Y=(30+-1)X(102.0+-.2).  TO DECIDE WHAT THE UNCERTAINTY IN Y IS,
81   YOU NEED TO KNOW THE ..,.... AND ..... VALUES OF THE PRODUCT.     82R
82R                                                                    83
82R  MAXIMUM MINIMUM,MINIMUM MAXIMUM,MAX MIN,MIN MAX, LARGEST SMALLEST 86
82R  MAXIMUMANDMINIMUM,MINIMUMANDMAXIMUM,MAXANDMIN,MINANDMAX           86
82R  SMALLEST LARGEST, GREATEST LEAST, LEAST GREATEST                  86
83   NO. THIS IS A CRITICAL QUESTION, AND WILL PLAGUE YOU IF YOU DO NOT GE
83   T IT.  TRY AGAIN. YOU MIGHT CHECK YOUR SPELLING.                  84R
84R                                                                    85
84R  MAXIMUM MINIMUM,MINIMUM MAXIMUM,MAX MIN,MIN MAX, LARGEST SMALLEST 86
84R  SMALLEST LARGEST, GREATEST LEAST, LEAST GREATEST                  86
84R  MAXIMUMANDMINIMUM,MINIMUMANDMAXIMUM,MAXANDMIN,MINANDMAX           86
85   TO DECIDE WHAT THE UNCERTAINTY IN A THING IS, YOU NEED TO KNOW THE MAX
85    AND MIN VALUES OF THAT THING, IN THIS CASE A PRODUCT.  WHEN YOU  HAVE
85    ABSORBED THIS, TYPE OK.                                          155R
86   VERY GOOD.                                                        87
155R                                                                   157
155R  OK                                                               87
157  I GUESS YOU DON'T UNDERSTAND THIS.  YOU ARE SIGNED OFF.           OFF
87   ALL THAT REMAINS NOW IS TO ACTUALLY DETERMINE THE MAXIMUM AND MINIMUM
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87    VALUES OF Y.  WHAT IS THE MAXIMUM VALUE OF Y                          88R
88R                                                                         89
88R   3168.2, 3168                                                          101
88R   3200                                                                  100
89    YOUR ANSWER ISN'T RIGHT.  PLEASE CHECK YOUR ARITHMETIC, AND TRY AGAIN.
89    (IF YOU GET THE SAME ANSWER, RETYPE IT.)                              90R
90R                                                                         91
90R   3168.2, 3168                                                          101
90R   3200                                                                  100
91    AS FAR AS I CAN TELL,  YOUR ANSWER IS NOT RIGHT.  THE MAXIMUM VALUE OF
91    THE PRODUCT WILL BE 31 X 102.2 = 3168.2  WHAT WILL BE THE MAX VALUE OF
91     W IF W = (16+-4) X (137+-1)   DON'T MULTIPLY OUT, JUST GIVE THE FACTO
91    RS,     AND     .                                                     92R
92R                                                                         93
92R   20 138, 138 20                                                        99
93    NOT RIGHT.  THE MAX VALUE OF W WOULD BE 20X138.  STUDY THIS AND ANSWER
93    AND TYPE OK WHEN, AND ONLY WHEN, YOU SEE ITS ORIGIN.                  94R
94R                                                                         95
94R   OK                                                                    96
95    I DON'T SEEM TO BE GETTING THROUGH TO YOU.  YOU ARE SIGNED OFF.       OFF
96    THUS THE MINIMUM VALUE OF W WOULD BE WHAT  (JUST GIVE THE FACTORS.)   97R
97R                                                                         98
97R   12 136,136 12                                                         99
99    GOOD.  LET'S GO BACK TO THE ORIGINAL QUESTION.                        87
98    NOT RIGHT.  I RECOMMEND YOU SIGN OFF AND SEE A LIVE PERSON FOR HELP.  OFF
101   YOUR LOGIC IS GOOD, SO IS YOUR ARITHMETIC, BUT YOUR SIGNIFICANT FIGURE
101   S ARE SICK.  3168.2 TO THE PROPER NUMBER OF SIG FIG IS 3200.  TRY TO O
101   BSERVE SIG FIGS IN WHAT FOLLOWS.  THE RULE TO REMEMBER IS THAT A
101   PRODUCT SHOULD CONTAIN NO MORE SIG FIGS THAN ANY OF ITS FACTORS.      102
100   EXCELLENT. - YOU ARE SHARP ON SIGNIFICANT FIGURES.  KEEP IT UP.       102
102   THE MAX VALUE IS 3200.  FROM THIS YOU CAN FIND OUT THE UNCERTAINTY IN
102   THE PRODUCT. IT IS +-        (IF YOU CAN DO IT, WRITE THE NUMERAL.  IF
102   YOU DON'T KNOW WHAT TO SAY, TYPE AID.)                                103R
103R                                                                        105
103R  200                                                                   171
103R  108,108.2                                                             104
103R  100                                                                   153
171   NO.  NOT THE SPREAD.  THE UNCERTAINTY IS THE MAXIMUM DEVIATION FROM TH
171   E STRAIGHT PRODUCT.  TRY AGAIN.                                       103R
153   FINE.                                                                 122
104   YOUR LOGIC, ETC, IS GOOD, BUT SIG FIGS ARE BAD.  WHAT YOU GOT, CORRECT
104   LY DONE, IS 3200-3100=100.                                            122
105   MAYBE THIS WILL HELP YOU.                                             106
106   YOU KNOW THE MAX VALUE OF THE PRODUCT Y.  IT IS 3200.  WHAT IS THE MIN
106   VALUE OF Y POSSIBLE                                                   107R
107R                                                                        110
107R  2952.2, 2952, 2950                                                    109
107R  2900                                                                  108
107R  3000                                                                  154
154   GOOD.  EVEN YOUR SIG FIGS ARE RIGHT.                                  111
109   LOGIC GOOD, BUT SINCE THERE ARE ONLY 2 SIG FIGS AVAILABLE IN 30,
109   THE CORRECT ANSWER IS 3000.                                           111
108   YOU ARE DOING FINE ON LOGIC AND SIG FIGS, BUT 2952 IS NEARER 3000 THAN
108   2900.  THE CORRECT ANSWER IS 3000.                                    111
110   GET HELP FROM A LIVE PERSON.  YOU ARE SIGNED OFF.                     OFF
111   THE ACTUAL PRODUCT IS 3100, TO TWO SIG FIGS.  NOW LOOKING AT THE VALUE
111   S Y COULD TAKE ON.  WHAT +- SHOULD YOU TACK ON TO 3100 TO SAY WHAT YOU
111   MEAN ABOUT THE UNCERTAINTY OF Y                                       112R
112R  100                                                                   114
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112R 200                                                                168
112R                                                                    169
169  NO. TRY AGAIN.                                                     170R
170R 100                                                                153
170R                                                                    113
168  NO.  NOT THE SPREAD.  THE UNCERTAINTY IS THE MAXIMUM DEVIATION FROM TH
168  E STRAIGHT PRODUCT.  TRY AGAIN.                                    112R
114  PRECISELY.                                                         115
113  NO.  SEEK HELP ON THIS--WE'RE NOT COMMUNICATING.  YOU ARE SIGNED OFF. OFF
115  BETTER TRY ANOTHER, JUST TO GET IT SOLID.                          116
116  P= (1.1 +-.4) X (10.00+-.01)   WHAT IS THE UNCERTAINTY IN P        117R
117R                                                                    118
117R 40,.4                                                              161
117R 80,.8                                                              161
117R 8, EIGHT                                                           167
117R 4, FOUR                                                            120
167  NO.  NOT THE SPREAD.  THE UNCERTAINTY IS THE MAXIMUM DEVIATION FROM TH
167  E STRAIGHT PRODUCT.  TRY AGAIN.                                    117R
120  GOOD.                                                              122
118  NO.  TRY AGAIN, AND WATCH FOR SIG FIGS.                            119R
119R 80,.8                                                              161
119R 8, EIGHT                                                           167
119R                                                                    121
119R .4, 40                                                             161
119R 4,FOUR                                                             120
161  INCORRECT, DECIMAL PLACE OFF.  TRY AGAIN                           119R
121  NO.  GET SOME HELP ON THIS.  YOU ARE SIGNED OFF.                   OFF
122  NOW TEST YOURSELF ON THE FOREGOING MATERIAL.                       123
123  QUESTION 1.  IN ORDER TO FIND THE UNCERTAINTY IN ANY CALCULATED QUANTI
123  TY, YOU MERELY HAVE TO FIND THE    AND    VALUES OF THAT QUANTITY.  124R
124R                                                                    126
124R MINIMUM MAXIMUM, MAXIMUM MINIMUM, MIN MAX, MAX MIN, LARGEST SMALLEST 127
124R SMALLEST LARGEST, GREATEST LEAST,LEAST GREATEST                    127
126  THE ANSWERS WERE MAXIMUM AND MINIMUM.                              127
127  QUESTION 2.  X=(41+-1) + (4+-2).  WHAT IS THE UNCERTAINTY IN X     128R
128R                                                                    129
128R 3,THREE                                                            130
130  RIGHT.                                                             131
129  THE ANSWER IS 3.                                                   131
131  QUESTION 3.  IN DOING 2, WHAT VALUE DID YOU GET FOR THE MIN        132R
132R                                                                    134
132R 42, FORTY TWO                                                      133
133  GOOD.                                                              135
134  THE ANSWER IS 42.                                                  135
135  QUESTION 4.  Y=(66+-3)-(22+-1). WHAT IS THE UNCERTAINTY IN Y       136R
136R                                                                    137
136R 4,FOUR                                                             138
138  GOOD.                                                              139
137  THE ANSWER IS 4.                                                   139
139  QUESTION 5.  R=(1.02+-.01)X(32+-1).  WHAT IS THE UNCERTAINTY IN R  140R
140R                                                                    142
140R 1,ONE                                                              158
140R 1.4                                                                141
141  LOGIC OK, BUT YOUR SIG FIGS ARE WRONG AND YOU MAY MESS UP LATER QUESTI
141  ONS.  THE ANSWER IS 1.                                             143
158  GOOD.                                                              143
142  NO.  1 IS THE CORRECT ANSWER.                                      143
143  QUESTION 6.  S=(1.02+-.01)X(3.214+-.002).  WHAT IS THE UNCERTAINTY IN
143   S                                                                 144R
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144R                                                                                  145
144R .03, .04                                                                         146
146  GOOD.                                                                            147
145  NO.  THE ANSWER IS AROUND .03.                                                   147
147  QUESTION 7.  A TOUGH ONE.  WATCH OUT.  T=(10+-2)/(1.0+-.1).  WHAT IS T
147  HE UNCERTAINTY IN T                                                              148R
148R                                                                                  149
148R 3,THREE                                                                          150
150  VERY CLEVER.                                                                     151
149  NO.  YOU MAY HAVE FORGOTTEN THE QUOTIENT IS MAX WHEN THE DENOMINATOR I
149  MIN.  THE CORRECT ANSWER IS T=3.                                                 151
151  THIS IS THE END OF THE EXERCISE.  COME BACK AND TALK TO ME AGAIN SOME
151  TIME.  GOOD BYE FOR NOW.                                                         EXIT

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100   CLASSROOM STATISTICS                                                    1
1     CLASSROOM TEACHERS SHOULD BE CONCERNED WITH AT LEAST 3 SIMPLE STATISTI
1     CAL MEASURES. THEY ARE CENTRAL TENDENCY, DISPERSION, STANDARD SCORES.
1      HOW MANY MEASURES OF CENTRAL TENDENCY (CLUSTERING AROUND SOME CENTRAL
1      POINT) ARE IMPORTANT FOR CLASSROOM TEACHERS   GO AHEAD, GUESS.  IT WO
1     N'T SHOCK YOU IF OUR ARE WRONG.  THAT WOULD BE AN ADVERSE STIMULUS AND
1      AT THIS POINT CONTRARY TO GOOD LEARNING THEORY.  REMEMBER TO USE NUME
1     RIC FOR NUMBERS.                                                       2R
2R                                                                           3
2R    3                                                                      7
2R    0.1                                                                    4
2R    0.1                                                                    5
2R    2                                                                      6
3     YOU MAY BE RIGHT, BUT FOR OUR PURPOSES WE WILL WORK WITH LESS.  TRY AG
3     AIN.                                                                   2R
4     PLEASE DON'T USE LETTERS OH OR EYE FOR NUMERALS.  TYPE A NUMERAL       2R
5     OH COME ON.  YOU CAN DO BETTER.  RAISE YOUR SIGHTS. TRY AGAIN.         2R
6     MANY TEACHERS USE ONLY 2, BUT THEY NEED MORE.  TRY AGAIN.              2R
7     CORRECT.  THERE MAY BE MORE, BUT CLASSROOM TEACHERS NEED ONLY 3.       8
8     LET'S EXAMINE THESE 3.  THEY ARE CALLED MEAN, MEDIAN, AND MODE.  A) ON
8     E IS THE MIDDLE SCORE IN AN ASCENDING OR DESCENDING ARRAY OF SCORES,B)
8      ANOTHER IS SIMPLY THAT OLD FRIEND THE ARITHMETIC AVERAGE, AND C) THE
8     OTHER IS THE MOST POPULAR SCORE IN AN ARRAY.  WHICH IS YOUR OLD FRIEND
8      ARITHMETIC AVERAGE                                                     9R
9R    MEAN                                                                   13
9R                                                                           10
10    NOPE.  TRY AGAIN.                                                      9R
13    CORRECT--YOU MUST HAVE HAD STATISTICS.                                 14
14    NOW YOU KNOW WHAT A MEAN IS.  SELECT THE LETTER  WHICH DEFINES THE MOD
14    E.                                                                     15R
15R   C                                                                      19
15R   B                                                                      16
15R   A                                                                      17
15R                                                                          18
16    NOPE, THAT'S THE MEAN.  TRY AGAIN.                                     15R
17    NO.  THERE'S ONLY ONE LEFT.  TRY IT.                                   15R
18    PLEASE CHOOSE A, B, OR C.                                              15R
19    RIGHT ON THE BUTTON.                                                   20
20    NOW WE KNOW THE FOLLOWING.  MEAN IS THE ARITHMETIC AVERAGE.  MODE IS T
20    HE MOST POPULAR (FREQUENT) SCORE.  MEDIAN IS THEN THE MIDDLE SCORE IN
20     AN ARRAY OF SCORES ARRANGED FROM HIGH SCORE TO LOW.  FROM THE FOLLOWI
20    NG ARRAY SELECT THE MEDIAN.
20    7,6,8,3,2,6,4,1,6,9,9.                                                 21R
21R   6                                                                      26
21R                                                                          24
22    ARRANGE THEM IN ORDER, HIGH TO LOW OR LOW TO HIGH, AND TRY AGAIN.      21R
11    I CAN'T UNDERSTAND YOU.  PLEASE ANSWER YES OR NO.                      23R
23R   YES, YEAH, YEP, SURE, OF COURSE                                        25
23R   NO, NEVER                                                              22
23R                                                                          11
24    DID YOY ARRANGE THE SCORES IN ORDER FROM HIGH TO LOW, OR LOW TO HIGH   23R
25    THEN YOU MUST HAVE COUNTED WRONG. THE MIDDLE OF 9,9,8,7,6,6,6,4,3,2,1
25    , IS 6. GO BACK AND CHECK THIS.TYPE IN THE CORRECT  VALUE FOR THE MEDI
25    AN.                                                                    21R
26    CORRECT.  YOU'VE LEARNED HOW TO CALCULATE ONE CENTRAL TENDENCY STATIST
26    IC.  NOW WHAT IS THE MOST POPULAR (FREQUENT) SCORE                     27R
27R   6                                                                      29
27R                                                                          28
28    GO BACK AND COUNT THE SCORE WHICH OCCURS MOST OFTEN.  THERE  TWO 9'S,
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28    THREE 6'S, AND ONE EACH OF THE OTHERS.  WHICH OCCURS MOST FREQUENTLY 27R
29    CORRECT.  2/3 OF CENTRAL TENDENCY COMPLETED.  ALL THAT'S LEFT IS THE M
29    EAN.  REMEMBER HOW YOU AVERAGED YOUR GRADES IN CLASSES.  USE THE SAME
29    TECHNIQUE.  WHAT IS THE MEAN OF THE ARRAY OF SCORES   GIVE THE ANSWER
29    TO THE NEAREST TENTH.                                                 30R
30R   5.5, 5.6                                                              32
30R                                                                         31
31    GO BACK AND CHECK YOUR ARITHMETIC.  GET THE TOTAL OF 61.  THEN DIVIDE
31    61 BY 11.  NOW GO BACK AND GET THE RIGHT ANSWER, OF ENROLL IN 3RD GRAD
31    E ARITHMETIC.                                                         30R
32    IF WE DENOTE EACH SCORE AS X, AND THE TOTAL OF THE SCORE AS SUMX AND T
32    HE  NUMBER OF SCORES AS N, WHAT IS THE FORMULA FOR CALCULATING THE MEA
32    N  (USE THE SYMBOL / FOR DIVISION.)                                   33R
33R   SUMX/N                                                                35
33R                                                                         34
34    REMEMBER THE MEAN IS THE ARITHMETIC AVERAGE.  IN OUR EXAMPLE WE ADDED
34    ALL THE SCORES AND GOT 61.  THEN WE DEVIDED BY 11 AND GOT 61/11=5.55.
34    USE THIS EXAMPLE AS A MODEL AND TRY AGAIN.                            33R
35    OK.  NOW YOU HAVE YOUR FIRST FORMULA. SUMX/N=MEAN OR X  . NOW LET'S RE
35    VIEW.  ARE THE FOLLOWING DEFINITIONS CORRECT
35    MEAN IS THE ARITHMETIC AVERAGE.
35    MODE IS THE MOST FROUENT SCORE.
35    MEDIAN IS THE MIDDLE SCORE IN AN ARRAY OF SCORES.                     36R
36R   NO                                                                    37
36R   YES, YEP,YEAH, SURE,OK, RIGHT                                         38
36R                                                                         12
12    I CAN'T UNDERSTAND YOU.  PLEASE ANSWER YES OR NO.                     36R
37    GO BACK TO THE BEGINNING AND START OVER.  THIS TIME BE MORE ATTENTIVE
37    TO THE MATERIAL AND LESS TO THE MACHINE.                              1
38    NOW THAT YOU UNDERSTAND CENTRAL TENDENCY CALCULATION, LET'S TRY DISPER
38    SION.  WE ARE ONLY CONCERNED WITH 2.  THE ONE IS REPRESENTED BY THE HI
38    GHEST AND LOWEST SCORES.  ANY IDEA AS TO WHAT IT IS CALLED            39R
39R   RANGE                                                                 41
39R                                                                         40
40    IT'S KIND OF TOUGH IF YOU HAVE'NT HAD STATISTICS.  THE ANSWER IS RANGE
40    .                                                                     42
41    CORRECT.                                                              42
42    WHAT WOULD BE THE RANGE FOR THIS ARRAY OF SCORES
42    9,7,4,11,2,6,7,8,9.  (JUST GIVE THE TWO NUMBERS.)                     43R
43R   2 11,2 TO 11, 11 2, 11 TO 2                                           45
43R                                                                         44
44    YOU DIDN'T READ THE DEFINITION CAREFULLY.    GO BACK AND READ IT AGAIN
44    .
44    NOW, WHAT IS THE RANGE                                                43R
45    CORRECT                                                               46
46    THE OTHER MEASURE OF DISPERSION IS CALLED STANDARD DEVIATION OR SIMPLY
46    S.D.IT SIMPLY MEANS THAT IF AN ARRAY OF TEST SCORES IS NORMAL IN DISTR
46    IBUTION, THEN 2/3 OF ALL OF THE SCORES WILL BE FOUND  BETWEEN +1 AND -
46    1 S.D.S FROM THE MEAN.
46    OK, NOW IF AN ARRAY OF TEST SCORES HAS A MEAN OF 50 AND A S.D. OF 10,
46    BETWEEN WHAT TWO SCORES SHOULD 2/3 OF THE STUDENTS FALL IF THE TEST HA
46    S A NORMAL DISTRIBUTION OF SCORES                                     47R
47R   40 AND 60, 40 60, 60 AND 40, 60 40                                    56
47R                                                                         48
48    LET'S TRY AGAIN.  IF WE GO PLUS TEN FROM 50, WHAT WILL WE HAVE        49R
49R   60                                                                    52
49R                                                                         50
50    NOPE.  50 + 10 EQUALS WHAT                                            51R
51R   60                                                                    52
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51R                                                                          101
101  GET SOME HELP FROM A LIVE PERSON.  YOU ARE SIGNED OFF.                  OFF
52   OK.  NOW WHAT IS 50 - 10 EQUAL TO                                       53R
53R                                                                          101
53R  40, FORTY                                                               54
54   SO +10 AND -10 FROM A MEAN OF 50 WOULD BE ALL SCORES BETWEEN 40 AND 60
54   .  THIS SHOULD INCLUDE 2/3 OF THE PUPILS IF THE DISTRIBUTION IS NORMAL
54   .                                                                       57
56   YOU'RE REALLY CATCHING ON.                                              57
57   NOW, IS THE FOLLOWING ARRAY OF SCORES WITH A MEAN OF 60 AND A STANDARD
57    DEVIATION OF 12 A NORMAL DISTRIBUTION WITHIN ONE S.D.
57   60, 47, 86, 71, 49, 46, 80, 90, 63, 60, 57, 61, 62, 58, 30, 66, 54, 59
57   , 68, 52, 41                                                            58R
58R  YES, YEP, YEAH, RIGHT, OK,SURE                                          69
58R  NO                                                                      59
58R                                                                          55
55   I CAN'T UNDERSTAND YOU.  PLEASE ANSWER YES OR NO.                       58R
59   HOW COME NO   LET'S COUNT THE SCORESS.  HOW MANY ARE THERE              60R
60R  21                                                                      102
60R                                                                          61
61   I COUNT A TOTAL OF 21 SCORES.  WHAT IS 2/3 OF 21                        103R
102  OK, WHAT IS 2/3 OF 21                                                   103R
103R 14, FOURTEEN                                                            63
103R                                                                         104
104  I GET 14.   IF YOU DON'T UNDERSTAND WHAT I'M DOING, TYPE OFF.  OTHERWI
104  SE TYPE IN THE CORRECT ANSWER AND CONTINUE.                             103R
63   ALL RIGHT.  WITH A MEAN OF 60 AND A S.D. OF 12, OUR +1 TO -1 S.D. RANG
63   E WOULD BE 72 TO 48.
63   NOW ARRANGE THE SCORES FROM HIGH TO LOW AND COUNT HOW MANY FALL BETWEE
63   N 72 AND 48.  HOW MANY ARE THERE                                        64R
64R  14                                                                      66
64R                                                                          65
65   NO. GO BACK AND COUNT AGAIN.                                            64R
66   OK.  BY DEFINITION THEN, IS THIS A NORMAL DISTRIBUTION WITHIN +1 OR -1
66    S.D.'S OF THE MEAN                                                     67R
67R  YES, YEAH, YEP, OK, RIGHT, SURE                                         69
67R                                                                          68
68   REMEMBER, IF AN ARRAY OF TEST SCORES IS SUCH THAT 2/3 OF ALL THE SCORE
68   S FALL BETWEEN +1 AND -1 S.D.'S FROM THE MEAN, THEN THE ARRAY HAS A NO
68   RMAL DISTRIBUTION.  NOW, IS THIS A NORMAL DISTRIBUTION IN OUR EXAMPLE 105R
105R YES,YEAH,    YEP, SURE, OK, RIGHT                                       69
105R                                                                         106
106  WELL, IT IS A NORMAL DISTRIBUTION.    IF YOU DON'T UNDERSTAND WHY I'M
106   SAYING THIS TYPE OFF.  OTHERWISE, TYPE THE CORRECT RESPONSE AND CONTI
106  NUE.                                                                    105R
69   NOW THEN, IF YOU HAD A CLASS OF 30 KIDS WHO GOT A MEAN SCORE OF 70 ON
69   A TEST WITH A S.D. OF 15, HOW MANY OF THE KIDS WOULD HAVE TO FALL BETW
69   EEN WHAT SCORES IN ORDER FOR YOU TO SEE THAT THIS CLASS DISTRIBUTED AC
69   CORDING TO NORMAL PROBABILITY WITHIN THE CONFINES OF ONE STANDARD DEVI
69   ATION     FIRST, HOW MANY PUPILS                                        107R
107R 20, TWENTY                                                              108
107R                                                                         71
71   LET'S LOOK AT THIS CAREFULLY.  NORMAL DISTRIBUTION CALLS FOR 2/3 OF TH
71   E STUDENTS TO FALL WITHIN +1 AND -1 S.D. OF THE MEAN.  WHAT IS 2/3 OF
71   30                                                                      72R
72R  20, TWENTY                                                              108
72R                                                                          73
73   CHECK YOUR   ARITHMETIC AND TRY AGAIN.                                  72R
108  OK.  NOW 70+15 AND 70-15  RESULTS IN WHAT SCORES                        74R
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74R  55 AND 85, 55 85, 85 AND 55, 85 55                                  76
74R                                                                      75
75   CHECK YOUR   ARITHMETIC AND TRY AGAIN.                              74R
76   THAT'S RIGHT.  20 STUDENTS WOULD HAVE TO FALL BETWEEN 85 AND 55 IF THE
76    CLASS WERE TO BE NORMALLY DISTRIBUTED.                             77
77   CALCULATION OF S.D. FOR STATISTICIONS INVOLVES SQUARES AND SQUARE ROOT
77   S -SO MOST CLASSROOM TEACHERS WOULDN'T USE IT.  THEREFORE FOR CLASSROO
77   M TEACHERS WE USE A SIMPLE METHOD WHICH TURNS PURISTS GREY, BUT WORKS.
77   WE TOTAL THE SCORES OF THE TOP  1/6 OF THE CLASS, SUBTRACT THE TOTAL S
77   CORE OF THE BOTTOM 1/6 OF THE CLASS, AND DIVIDE BY 1/2 OF THE NUMBER
77   OF KIDS TAKING THE TEST.  THAT IS,
77   (TOTAL 1/6(TOP)-TOTAL 1/6(BOTTOM))/(N/2)
77   IF THERE WERE 19 KIDS YOU'D HAVE 3 IN EACH OF UPPER AND LOWER 1/6S.  I
77   F THERE WERE 23, YOU'D HAVE 4 IN EACH OF THE UPPER AND LOWER 1/6S.  WH
77   AT WOULD THE NUMBER IN THE UPPER AND LOWER 1/6S OF 31 STUDENTS BE     78R
78R  5,FIVE                                                              109
78R                                                                      79
79   1/6 OF 31 EQUALS 5 + LESS THAN 1/2, ERGO 5.                         109
109  NOW, WHAT  WOULD YOU GET FOR N/2                                    80R
80R  15.5                                                                82
80R                                                                      81
81   31/2 EQUALS 15.5.  IF YOU DON'T UNDERSTAND, TYPE OFF.  OTHERWISE, GIVE
81    THE CORRECT REPLY AND CONTINUE.                                    80R
82   OK.  LET'S TEST YOUR USING THE SCORES OF 60, 68, 60, 60, 59, 66, 67,
82   52, 61, 54, 53, 67, 66, 51, 53, 54, 68, 63, 60, 62, 60, 52, 58, 51. WH
82   AT IS THE S. D. OF THIS ARRAY OF SCORES, USING THE CLASSROOM TEACHERS'
82    METHOD   YOU MATH WIZARDS AND SKEPTICS CAN CHECK IT OUT BY THE STATIS
82   TICIANS' FORMULA.  CARRY TO THE NEAREST ONE HUNDRETH.               83R
83R                                                                      84
83R  5.25, 5 1/4                                                         98
84   THE TOP 1/6 SCORES (4 SCORES) ARE 68, 68, 67, 67.  WHAT DO THEY TOTAL 85R
85R                                                                      86
85R  270                                                                 87
86   CHECK YOUR ADDITION AND TRY AGAIN.                                  85R
87   OK.  NOW THE BOTTOM 4 SCORES ARE 51, 51, 52, 53.  WHAT DO THEY TOTAL 88R
88R                                                                      89
88R  207                                                                 90
89   CHECK YOUR ADDITION AND TRY AGAIN.                                  88R
90   OK.  NOW 270-207=63.  63/(N/2) GIVES YOU WHAT                       91R
91R                                                                      92
91R  5.25, 5 1/4                                                         98
92   N, OR NUMBER OF SCORES IS 24.  N/2=12.  NOW TRY AGAIN.              94R
94R                                                                      95
94R  5.25, 5 1/4                                                         98
95   OH COME ON--WHAT'S 63 DIVIDED BY 12                                 96R
96R                                                                      97
96R  5.25, 5 1/4                                                         98
97   YOU SEEM TO BE HAVING TROUBLE.  GET SOME  HELP.  YOU ARE BEING SIGNED
97   OFF.                                                                OFF
98   NOW WE HAVE A STANDARD DEVIATION OF 5.25.  IF THIS ARRAY OF SCORES HAS
98    A MEAN SCORE OF 60, BETWEEN WHAT 2 SCORES DOES +1 OR -1 S.D. FALL   E
98   XPRESS AS A FRACTION, LOW SCORE TO HIGH SCORE.                      99R
99R  54 3/4 65 1/4, 54 3/4 TO 65 1/4                                     112
99R                                                                      111
111  60-5 1/4 = 54 3/4.   60+5 1/4 = 65 1/4                              112
112  NOW WE KNOW THAT +1 TO -1 S.D. IS FROM 54 3/4 TO 65 1/4.  IS THIS A NO
112  RMAL CURVE WITHIN ONE S.D.                                          113R
113R NO,NEVER                                                            115
113R                                                                     114
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114 GO BACK AND COUNT ALL THE SCORES FROM 55 TO 65 INCLUSIVE. HOW MANY AR
114 E THERE 116R
115 CORRECT. THERE ARE ONLY 12 SCORES BETWEEN 55 AND 65 INCLUSIVE. A NOR
115 MAL CURVE WOULD NEED 18, GIVE OR TAKE ONE OR TWO TO HAVE 2/3 OF THE SC
115 ORES. 120
116R 12, TWELVE 119
116R 117
117 COUNT THEM AGAIN. 116R
119 OK. 12 IS NOT 2/3, ONLY 1/2. +1 TO -1 S.D. TAKES 2/3 OF 24, OR 18. 120
120 NOW WE HAVE THE MECHANICS OF S.D. LET'S TRY A THEORY QUESTION. ASSUM
120 E YOU USE THE CONCEPT OF BELL SHAPED OR NORMAL CURVES. COULD YOU LEGI
120 TIMATELY USE GRADE RANGES FROM 55 TO 65 AS C'S FOR THIS ARRAY OF SCORE
120 S 121R
121R NO, NEVER 122
121R 123
122 RIGHT ON THE BUTTON. NORMAL CURVES ASSUME 2/3 OF SCORES IN +1 OR -1 S
122 .D. THIS DOESN'T HAVE THAT. 124
123 MAYBE YOU COULD, BUT YOU'D BE WRONG. THERE ARE NOT 2/3 OF THE SCORES
123 BETWEEN 55 AND 65 SO YOU SHOULD NOT USE NORMAL CURVE STATISTICS IN GRA
123 DING. 124
124 IF WE GAVE ONE STUDENT A 36 INCH YARD STICK, ONE A 35 INCH YARDSTICK,
124 AND ONE A 34 INCH YARD STICK, ALL MARKED OFF IN 36 EQUAL DIVISIONS WI
124 THOUT TELLING THEM WHICH WAS WHICH, WUOLD YOU EXPECT EACH STUDENT TO G
124 ET THE CORRECT ANSWER TO THE DIMENSIONS OF A GIVEN ROOM 125R
125R NO 62
125R 127
62 RIGHT 126
126 THAT WOULD BE UNFAIR. BUT THAT'S JUST WHAT YOU DO WHEN YOU AD
126 D 2 OR MORE RAW SCORES OF DIFFERENT STUDENTS AND THEN COMPARE TOTALS.
126 IN ORDER TO AVOID THIS ERROR, WE USE A TECHNIQUE CALLED STANDARD SCOR
126 E. THIS TECHNIQUE TRYS TO EQUATE TESTS OF DIFFERENT DIFFICULTY BY USI
126 NG MEANS AND S.D.S OF EACH TEST. THE FORMULA IS
126 10((RAW SCORE-MEAN)/S.D.)+50
126 LET'S SEE IF YOU CAN HANDLE THIS MUCH. IF A STUDENT GOT A RAW SCORE O
126 F 60 ON A TEST WITH A MEAN OF 50 AND A S.D. OF 5, WHAT WOULD HIS STAND
126 ARD OF T SCORE BE 128R
127 YOU'VE GOT TO BE KIDDING I'M GLAD YOU'R NOT MY TEACHER. THE CORRECT
127 ANSWER IS NO. 126
128R 70, SEVENTY 130
128R 129
129 60-50=10. 10/5=2.2X10=20. 20+50=70. 130
130 NOW THAT YOU SEE THAT, TRY A RAW SCORE OF 40, MEAN OF 50, AND S.D. OF
130 5. WHAT IS THAT T SCORE 131R
131R 30, THIRTY 133
131R 132
132 40 - 50=-10. -10/5=-2. -2X10=-20. -20+50=30 133
133 GOOD T SCORES ARE BASED ON A SCALE WHICH HAS A S.D. OF 10 AND A MEAN O
133 F 50. THUS, WHEN RAW SCORES ARE CONVERTED TO T SCORES, THE RESULTS ON
133 2 OR MORE TESTS CAN BE MORE LEGITIMATELY ADDED AND STUDENTS COMPARED
133 . 134
134 ONE MORE SET OF STATISTICS TO GO, AND THEN YOU CAN SIGN OFF. NOW THAT
134 WE KNOW HOW TO TREAT TEST SCORE ARRAYS, WHAT ABOUT THE QUESTIONS WHIC
134 H MAKE UP THE TEST ALL THE STATISTICS IN THE WORLD ARE USELESS IF TH
134 E TEST QUESTIONS ARE BAD. FOR THIS WE USE ITEM ANALYSIS. ONE MEASURE
134 IS INDEX OF DIFFICULTY. THE OTHER IS INDEX OF DISCRIMINATION. WHICH
134 OF THESE DO YOU THINK MEASURES HOW HARD A QUESTION WAS FOR THE WHOLE
134 CLASS 135R
135R DIFFICULTY, INDEX OF DIFFICULTY 137
135R 136

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136  NOPE--WRONG GUESS.  IT'S THE INDEX OF DIFFICULTY.                    137
137  OK.  THEN THE INDEX OF DISCRIMINATION TELLS HOW WELL STUDENTS  WITH GO
137  OD TOTAL TEST SCORES DID ON A SPECIFIC QUESTION AS COMPARED TO STUDENT
137  S WHO DID POORLY ON THE TEST.  WE HAVE TWO FORMULAS FOR CALCULATING TH
137  ESE INDICES.
137  I OF DIFFICULTY = (=WHO GOT QUESTION WRONG/= WHO TRIED QUESTION)X100.
137  I OF DISCRIMINATION =((= IN UPPER 1/3 OF TEST WHO GOT TEST QUESTION RI
137  GHT)-(= IN LOWER 1/3 OF TEST WHO GOT IT RIGHT))/(= IN 1/3)
137  I(DIS) =(U(1/3C)-L(1/3C))/(= IN 1/3)
137  WOULD A QUESTION WITH A 90( INDEX OF DIFF BE A HARD OR EASY QUESTION  138R
138R HARD                                                                  139
138R                                                                       140
140  OOPS   IF 9 OUT OF 10 MISSED THE QUESTION (= WRONG 9)/(= TRIED 10)X100
140   IS .9X100=90(.  THAT'S A TOUGH QUESTION.                             141
139  RIGHT, THE HIGHER THE I OF DIFF, THE TOUGHER THE QUESTION.            141
141  LET'S TRY THIS OUT.  IF 6 STUDENTS OUT OF A CLASS OF 30 MISSED A QUEST
141  ION, WHAT IS THE I OF DIFF   TYPE AS A (.                             142R
142R 20                                                                    150
142R                                                                       144
144  HOW MANY MISSED IT                                                    145R
145R 6                                                                     148
145R                                                                       146
146  WRONG--READ THE PROBLEM AND TRY AGAIN.                                147R
147R                                                                       143
147R 6                                                                     148
143  YOU ARE BEING SIGNED OFF.  GO GET HELP FROM A LIVE PERSON.            OFF
148  OK, IF 6 GOT IT RIGHT AND 30 TRIED IT, 6/30=.20X100 EQUALS WHAT (     149R
149R 20                                                                    150
149R                                                                       143
150  RIGHT   THIS WOULD BE AN EASY QUESTION.  GENERALLY FOR CLASSROOM TESTS
150  , AT LEAST 50( OF THE QUESTIONS SHOULD HAVE I OF DIFF FROM 20 TO 80(.
150  NOW USING THE FORMULA FOR I OF DIS, CALCULATE THE INDEX     FOR QUESTI
150  ON =4 FROM THE FOLLOWING TABULATION OF TEST DATA.
150  STUDENT     TEST QUESTION      TOTAL SCORE
150              X MEANS MISSED     ON TEST
150               12345678910
150     A                X                9
150     B           X    X XX             6
150     C             X    X              8
150     D          XXXX X X X             3
150     E          XXX XX XXX             2
150     F          X  X  X                7
150     G                X                9
150     H          XXXXXX XXX             1
150     I          X X X X X              5
150
150  TYPE YOUR ANSWER AS .TWO DIGIT =                                      151R
151R .66, .67                                                              155
151R                                                                       152
152  LET'S LOOK AT THE TABLE.  THE TOP 1/3 ARE SCORES OF 9, 9, 8.  THE BOTT
152  OM 1/3 ARE SCORES OF 1, 2, 3.  NOW SUBTRACT THE NUMBER IN BOTTOM 1/3 F
152  ROM THE NUMBER IN TOP 1/3 WHO GOT IT CORRECT AND DIVIDE BY THE NUMBER
152  IN 1/3 (3).  WHAT DO YOU GET   TYPE .TWO DIGIT NUMBER                 153R
153R .66, .67                                                              155
153R                                                                       154
154  NOPE  ALL THREE OF THE TOP SCORERS GOT IT RIGHT AND ONLY ONE OF THE BO
154  TTOM SCORERS DID.  THEREFORE, 3-1=2 AND SINCE THERE ARE 9 STUDENTS, 1/
154  3 IS 3.  2/3=.66.   IF YOU STILL DON'T UNDERSTAND, SEE ME, BUT IN THE
154  MEANTIME, GO ON.                                                      155
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155  OK.  NOW LET'S LOOK AT QUESTION =7 AND CALCULATE ITS I OF DIS  TYPE TW
155  O .PLACES.
156R -.66, -.67                                                          156R
156R .66, .67                                                            161
156R                                                                     93
                                                                         157
93   THE NUMERICAL VALUE IS CORRECT, BUT YOU FORGOT THE - SIGN. (1-3)/3=-2/
93   3=-.66.  NOW GO ON.
                                                                         158
157  AS BEFORE, THE TOP 1/3 ARE 9, 9, 8 AND THE BOTTOM ARE 1, 2, 3, AND 1/3
157   OF THE CASES IS 3.  THEREFORE, TOP 1/3 CORRECT(1)-BOTTOM 1/3 CORRECT
157  (3)=-2. -2/3=-.66.  NOW GO ON.
                                                                         158
161  CORRECT -66 IS THE ANSWER.
                                                                         158
158                                NOW YOU SHOULD BE ABLE TO SEE THAT IT MAKE
158  S A DIFFERENCE WHICH KIDS GET A QUESTION CORRECT.  OBVIOUSLY, SOMETHIN
158  G ABOUT QUESTION =7 IS DIFFERENT OR WRONG,IF MORE OF THE POOR SCORERS
158  ON A TEST GET IT RIGHT THAN THE GOOD SCORERS.  AT THIS POINT, YOU LOOK
158   AT THE QUESTION AND ASK WHY--
158  FOR INDEX OF DISCRIMINATION, AGAIN ABOUT 50( OF THE TEST QUESTIONS SHO
158  ULD FALL BETWEEN +.20 AND +.80.  YOU SHOULD NEVER HAVE A NEGATIVE INDE
158  X.
158  DID YOU LIKE THE COMPUTER AS A METHOD OF TEACHING SOME BASIC SKILLS   159R
159R YES
                                                                         160
159R                                                                     160
160  REGARDLESS OF YOUR ANSWER, YOU SHOULD BE ABLE TO SEE THAT IT CAN BE US
160  ED TO RELIEVE A TEACHER'S TIME FROM ROUTINE TASKS.  THEORETICALLY YOU
160  NOW KNOW HOW TO CALCULATE                          , IF NOT USE, MEASURES OF C
160  ENTRAL TENDENCY, DISPERSION, STANDARD SCORES, AND TO DO ITEM ANALYSIS.
160   THAT'S IT, SO BE PREPARED TO DISCUSS YOUR REACTIONS IN CLASS, AND IF
160  YOU'RE STILL UNCLEAR ON CERTAIN CALCULATIONS, SEE YOUR INSTRUCTOR. IN
160  THE MEANTIME, GET THE STATISTICS WORK SHEET OUT AND SEE IF YOU CAN COM
160  PLETE IT.  THANKS.
                                                                         EXIT

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ABSTRACT

800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822

This consortium of liberal arts colleges was instrumental in developing and coordinating their research capability through data processing. Forty research and academic development projects were undertaken. Of special importance: The Pass-Fail System, Study Habits in the Three-three calendar, Changing Trends in Attrition, The Weighting of High School Class Ranks, Development of a Long-Range Planning Model, Coordination of Graduation Check Accounting with Academic Development Records, Computer Orientation in Enrollment. Of twenty-five "seed grants" two have blossomed as funded research projects: Dr. Pillsbury's Development of a Computer Augmented Accounting Course received $29,000 from three sources. Dr. Ballard's program for Directing and Advising Political Science Majors received a $10,000 USOE Small Projects Research Grants. Proposals for two other projects are pending with USOE.